Table 2-1. Population for 1990-2010, Cities and Township, Santa Rosa Plain.

City or Township	1990[1]	2000[1]	2010[2]
Santa Rosa	113,313	147,595	167,302
Rohnert Park	36,326	42,236	40,952
Cotati	5,714	6,471	7,258
Sebastopol	7,004	7,774	7,380
Town of Windsor	13,371	22,744	26,751
Totals	**175,728**	**226,820**	**249,643**

[1] California Department of Finance (2012a).

[2] Estimated population on January 1, 2010. California Department of Finance (2012b).

Table 2-2. Land Use Survey Data Summary – 1974 to 2008.

LAND USE TYPE	LAND USE SURVEY YEARS[1]									
	1974		1979		1986		1999		2008	
Single Use	Acres	Sq Mi	Acres	Sq Mi	Acres	Sq Mi	Acres	Sq Mi	Acres	Sq Mi
Urban and Residential	28,902	45	20,767	32	23,432	37	29,233	46	-	-
Commercial and Industrial	700	1	1,637	3	2,221	3	2,772	4	-	-
Total Agriculture	24,681	39	23,919	37	28,080	44	24,644	39	25,782	40
Irrigated	*7,298*	*11*	*10,058*	*16*	*12,003*	*19*	*19,040*	*30*	-	-
Non-Irrigated	*17,383*	*27*	*13,861*	*22*	*15,218*	*24*	*5,059*	*8*	-	-
Idle (Irrigated/Non-Irrigated)	*0*	*0*	*0*	*0*	*859*	*1*	*545*	*1*	-	-
Native Vegetation	112,637	176	102,664	160	93,555	146	93,909	147	-	-
Riparian	0	0	408	1	416	1	1,318	2	-	-
Water Surface	358	1	640	1	832	1	1,635	2	-	-
Unknown Designation	108	0	27	0	250	0	0	0	-	-
Mixed Use										
Lumped Mixed[2]	0	0	413	1	311	1	215	0	-	-
Urban/Residential/Native Vegetation	0	0	16,458	26	16,080	25	13,967	22	-	-
Urban/Residential/Native Vegetation/Non-Irrigated Agriculture	0	0	156	0	2,082	3	415	1	-	-
Urban/Residential/Riparian/Water Surface	0	0	0	0	0	0	87	0	-	-
Total Single & Mixed Use Urban/Residential	*28,902*	*45*	*37,381*	*58*	*46,242*	*72*	*43,615*	*68*	-	-
TOTALS	167,386	262	167,089	261	167,259	261	167,595	262	-	-

[1]Modified from California Department of Water Resources, 1974, 1979, 1986, and 1999; County of Sonoma Permit and Resource Management Department; unpublished crop surveys of Sonoma County, Division of Planning and Local Assistance, Sacramento.
[2]Irrigated Agriculture/Urban/Residential; Irrigated Agriculture/Native Vegetation; Irrigated Agriculture/Urban/Residential/Native Vegetation; Non-Irrigated Agriculture/Native Vegetation; Non-Irrigated Agriculture/Urban/Residential.
Sq Mi – square miles.

Table 2-3. Water Supplied to Contractors in the Plan Area, 2003-2012.

Retail Customer	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
City of Cotati	913	1,101	1,048	1,051	886	768	657	664	535	499
City of Rohnert Park	2,646	4,920	5,014	5,216	4,364	4,300	2,442	3,066	3,625	3,747
City of Santa Rosa	22,734	24,324	22,596	23,897	22,765	22,434	19,400	17,912	17,986	18,302
Town of Windsor(1)	4,091	4,488	3,907	4,336	4,519	4,425	3,855	3,447	3,566	3,826
Cal-American Water	453	512	538	509	543	453	322	359	389	313
Penngrove Water Co	206	238	211	227	227	222	204	179	178	185
Total	**30,384**	**34,834**	**32,565**	**34,501**	**32,534**	**31,926**	**26,354**	**25,089**	**25,711**	**26,374**

Notes:
All values in acre-feet per water year.
[1] Deliveries to Town of Windsor include water diverted by the Town of Windsor under the Water Agency's water rights.

Table 2-4. Hydrogeologic Units in the Plan Area.

Hydrogeologic Unit	Geologic Age	Age in Million Years	Mapped Geologic Units	Estimated Thickness in feet	Specific Yield (percent)	Depositional Environment	Lithologic Description
Quaternary Deposits	Quaternary	1.8 to Present	Younger and older alluvium, alluvial fan and terrace deposits.	0-550	8 to 17	Stream channel; flood-plain; alluvial fans; lacustrine.	Gravel; sand and gravel; sand; clay; sand and clay.
Glen Ellen Formation	Early Pleistocene (?) and Pliocene.	0.011 to 5.3	Glen Ellen Formation, Huichica Formation, and other unnamed Tertiary Continental deposits.	0-600	3 to 7	Continental, piedmont; alluvial fans; local lacustrine.	Clay and sand; clay and gravel; sand; sand and gravel; tuff; conglomerate.
Wilson Grove Formation	Late Pliocene to Late Miocene	1.8 to 23.0	Include rocks formerly assigned to Merced Formation.	0-2,700	10 to 20	Deep to shallow marine; locally transitional to continental environments.	Sand; sandstone; blue sandstone; clay, sand or gravel and shells; clay and sand.
Volcanic Rocks	Pliocene to Miocene	1.8 to 23.0	Includes Sonoma, Tolay, and Burdell Mountain volcanics.	0-3,000	0 to 15	___	Basalt; volcanic breccia; tuff.
Petaluma Formation	Pliocene to Late Miocene	1.8 to 23.0	Includes the Petaluma Formation.	0-3,000	3 to 7	Fluvial and lacustrine, estuarine and transitional marine environment.	Clay; clay and sand; shale; sand or sandstone.
Basement rocks	Pre-Miocene; predominantly Jurassic and Cretaceous	65.5 to 199.6	Includes the Franciscan Complex; Great Valley Complex and Coast Range Ophiolite.	>2,000	NA	___	Sandstone; greywacke; chert; serpentine.

Table 2-5. Streamflow Gaging Stations in the Plan Area.

Station ID	Station Name	Begin Date	End Date	Status
USGS 11465500	MARK WEST C NR WINDSOR CA	10/1/06	4/30/08	Inactive
USGS 11465660	COPELAND C A ROHNERT PARK CA	10/1/06	Active	Active
USGS 11465680	LAGUNA DE SANTA ROSA A STONY PT RD NR COTATI CA	11/6/98	Active	Active
USGS 11465690	COLGAN C NR SANTA ROSA CA	10/1/06	Active	Active
USGS 11465700	COLGAN C NR SEBASTOPOL CA	11/7/98	Active	Active
USGS 11465750	LAGUNA DE SANTA ROSA C NR SEBASTOPOL CA	11/18/98	Active	Active
USGS 11466065	BRUSH C A SANTA ROSA CA	10/1/05	4/30/10	Inactive
USGS 11466170	MATANZAS C A SANTA ROSA CA	10/1/04	Active	Active
USGS 11466200	SANTA ROSA C A SANTA ROSA CA	10/1/39	Active	Active
USGS 11466320	SANTA ROSA C A WILLOWSIDE RD NR SANTA ROSA CA	12/9/98	Active	Active
USGS 11466800	MARK WEST C NR MIRABEL HEIGHTS CA	10/1/05	Active	Active
CEMAR MW 01	MARK WEST CREEK BELOW TARWATER ROAD	10/1/10	Active	Active
CEMAR MW 02	MARK WEST CREEK ABOVE PORT CREEK	9/25/12	Active	Active
CEMAR MW 06	MARK WEST CREEK AT NEAL CREEK	9/25/12	Active	Active

Table 2-6. Simulated Water Budget for 1976-2010.

Inflows and Outflows	Average Water Years 1976–2010 with pumping (acre-feet per year)	Average Water Years 1976–2010 without pumping (acre-feet per year)
Inflows		
Precipitation[1]	531,000	531,000
Total inflows	531,000	531,000
Outflows		
Evapotranspiration	262,000	271,000
Streamflow	230,000	249,000
Net groundwater boundary flow	700	3,600
Pumpage	35,600	0
Total outflows	528,300	523,600
Change in total storage (total inflow – total outflow)	**2,700**	**7,400**

[1] Includes reclaimed water.

Table 2-7. Simulated Groundwater Budget for Long- and Short-Term Conditions, Dry- and Wet-Year.

Parameter	Long-Term Average 1976–2010 Water Years (acre-feet per year)	Short-Term Average 2004–2010 Water Years (acre-feet per year)	Dry Water Year (2009) (acre-feet	Wet Water Year (2006) (acre-feet)
Precipitation[1]	525,000	491,000	355,000	723,000
INFLOWS				
Boundary flows	7,200	7,200	7,300	7,000
Extra-channel recharge	41,000	41,700	21,500	69,700
Recharge from streams	32,400	32,900	28,100	38,700
Total inflow	80,600	81,800	56,900	115,400
OUTFLOWS				
Pumpage	35,600	42,000	42,700	39,700
Boundary flows	7,900	7,600	7,100	8,300
Groundwater (ET)	8,500	7,200	5,900	8,500
Surface recharge	6,100	5,200	3,100	8,100
Groundwater discharge to streams	25,800	24,600	18,900	31,400
Total outflow	83,900	86,600	77,700	96,000
Storage change (total inflow-total outflow)	**–3,300**	**–4,800**	**–20,800**	**19,400**

[1] Does not include reclaimed water.

Table 2-8. Simulated Groundwater Budget for Baseline and Climate Change Scenarios.

Selected Surface-Water Components	Historical-Climate 1981–2010 Water Years (acre-feet per year)	GA2 2011–40 Water Years (acre-feet per year)	GB1 2011-40 Water Years (acre-feet per year)	PA2 2011–40 Water Years (acre-feet per year)	PB1 2011–40 Water Years (acre-feet per year)
Precipitation	543,000	530,000	559,000	538,000	641,000
Total streamflow	238,000	217,000	256,000	219,000	314,000
Runoff	178,000	164,000	192,000	165,000	299,000
Interflow	66,200	67,400	78,000	68,900	96,000
Net stream leakage	6,400	14,800	14,600	15,400	11,200
Groundwater Inflows					
Boundary flows	7,200	7,500	7,500	7,500	7,300
Extra-channel recharge	43,500	40,900	43,200	39,400	50,900
Recharge from streams	32,800	35,900	36,300	36,300	36,700
Total inflow	83,500	84,300	87,000	83,200	94,900
Groundwater Outflows					
Pumping	36,500	47,300	47,600	45,900	46,300
Boundary Flows	8,000	6,500	6,600	6,500	7,100
Groundwater ET	8,300	7,000	7,200	6,700	8,400
Surface leakage	6,300	3,400	3,800	3,400	5,400
Groundwater discharge to streams	26,400	21,100	21,700	20,900	25,500
Total outflow	85,500	85,300	86,900	83,400	92,700
Storage Change (total inflow–total outflow)	**–2,000**	**–1,000**	**100**	**–200**	**2,200**

Precipitation for the historical-climate baseline includes reclaimed water; total streamflow is the sum of runoff and interflow minus net stream leakage

Table 3-1. Beneficial Water Uses – North Coast Region.

HU/HA /HSA	HYDROLOGIC UNIT/AREA/SUBUNIT/ DRAINAGE FEATURE	BENEFICIAL WATER USES[1]																		
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	WILD	RARE	MIGR	SPWN	SHELL	AQUA
114.20	MIDDLE RUSSIAN RIVER HYDROLOGIC AREA																			
114.21	Laguna Hydrologic Subarea	P	E	E	P	E	E	E	E	E	E	E	E	E	E	E	E	E	P	P
114.22	Santa Rosa Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E	E	E	E	E	P	P
114.23	Mark West Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E	E	E	E	E	P	P
114.24	Warm Springs Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E	E	E	E	E		E
114.25	Geyserville Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E	E	E	E	E	E	P	P
114.26	Sulphur Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E	E	E	E	E	E		P

MUN municipal and domestic supply
AGR agricultural supply
IND industrial service supply
PRO industrial process supply
GWR groundwater recharge
FRSH freshwater replenishment
NAV navigation
POW hydropower generation
REC1 water contact recreation
REC2 non-contact water recreation
COMM commercial and sport fishing
WARM warm freshwater habitat
COLD cold freshwater habitat
WILD wildlife habitat
RARE rare, threatened, or endangered species
MIGR migration of aquatic organisms
SPWN spawning, reproduction, and/or early development
SHELL shellfish harvesting
AQUA aquaculture
E existing beneficial use
P potential beneficial use

[1] North Coast Regional Water Quality Control Board, 2011.

Table 5-1 Summary of Basin Management Objectives and Management Components.

Basin Management Objectives	BMO No.1 Ensure information is readily accessible through the internet and other public forums, and receive public input during public meetings	BMO No.2 Provide information to increase public awareness of current surface water and groundwater supplies and planning activities in a changing climate	BMO No.3 Measure groundwater elevations and foster activities aimed at maintaining groundwater elevations	BMO No.4 Evaluate surface water and groundwater interactions and foster protection against adverse interactions	BMO No.5 Monitor groundwater quality and foster activities aimed at groundwater protection and improvement	BMO No.6 Monitor for land subsidence and foster activities aimed at protecting against groundwater extraction-related land subsidence	BMO No.7 Monitor rainfall to improve modeling of water supply through a better understanding of rainfall distribution and density	BMO No.8 Maintain and update the surface water/ groundwater model to support and enhance science-based decision-making	BMO No.9 Identifymap and encourage protection of groundwater recharge areas, and provide groundwater recharge area maps to local agencies for planning	BMO No.10 Encourage best practices and proper permitting for the construction, placement, reconstruction and destruction of all wells	BMO No.11 Promote actions to conserve and reduce water usage and increase water and energy efficiency by urban and non-urban water users	BMO No.12 Enhance groundwater recharge while protecting or improving groundwater quality	BMO No.13 Increase water reuse in a safe and environmentally sound manner to enhance water supply reliability and reduce demands on groundwater and surface water	BMO No.14 Improve coordination and interaction between water resource management agencies and further cultivate state and federal partnerships for program	BMO No.15 Conjunctively manage surface water and groundwater to improve water supply availability and reliability	BMO No.16 Coordinate surface water and groundwater management with land use planning and development	BMO No.17 Foster shared management responsibilities among urban and rural stakeholders	BMO No.18 Incorporate planning for the potential effects of climate change on surface water and groundwater supplies into existing and future local and regional plans
Component 1 - Stakeholder Involvement																		
Involving the Public	√	√	√	√	√	√	√	√	√	√	√	√		√		√	√	√
Advisory Groups	√	√	√	√	√	√	√	√	√	√	√	√		√		√	√	√
Informing Stakeholders & Public Agencies	√	√	√	√	√	√	√	√	√	√	√	√		√		√	√	√
Partnerships & Coordination	√	√	√	√	√	√	√	√	√	√	√	√		√		√	√	√
Component 2 - Monitoring Program & Modeling																		
Groundwater-Level Monitoring			√	√	√	√		√						√			√	
Groundwater Quality Monitoring				√	√			√						√				
Ineliastic Land Surface Subsidence Monitoring			√			√		√						√				
Surface Water-Groundwater Interaction Monitoring			√	√				√						√				
Hydrometeorological Monitoring							√							√			√	
Monitoring & Reporting Protocols			√	√	√	√	√	√						√				
Data Management			√	√	√	√	√	√						√				
Data Needs Prioritization			√	√	√	√	√	√						√				
Modeling			√	√	√	√	√	√						√				√
Component 3 - Groundwater Protection																		
Maintain Groundwater Levels			√	√	√							√	√				√	
Prevent Adverse Interactions Between Groundwater and Surface Water			√		√							√	√					
Well Construction, Maintenance, Protection, Abandonment and Destruction				√	√					√				√			√	
Mapping and Protecting Groundwater Recharge Areas			√	√	√		√		√			√		√			√	
Evaluate Distribution and Remediation of Contaminated Groundwater				√	√							√		√				
Identify and Provide Information to the Public on Groundwater Protection	√	√		√	√							√					√	
Component 4 - Increase Conservation & Efficiency																		
Continue and Increase BMPs for Urban Water Conservation			√	√		√					√						√	
Voluntary Water Conservation BMPs for Unincorporated Areas			√	√		√					√						√	
Component 5 - Increase Groundwater Recharge																		
Stormwater Recharge by Infiltration			√	√	√	√						√		√	√		√	√
Aquifer Storage & Recovery and Groundwater Banking			√	√	√	√						√		√	√		√	√
Surface Water Use In Lieu of Groundwater			√	√	√	√						√		√	√		√	√
Low Impact Development (LID) in New Construction			√	√	√	√			√			√		√	√		√	√
Component 6 - Increase Water Reuse																		
Increase Recycled Water for Agricultural Irrigation			√	√		√							√	√	√		√	
Increase Recycled Water for Landscape Irrigation			√	√		√							√	√	√		√	
Graywater for Domestic Landscape Irrigation			√	√		√							√		√		√	
Component 7 - Integrated Groundwater Management																		
Groundwater Management & Land Use Planning			√	√	√	√		√	√	√		√		√		√		√
Monitor, Track and Incorprate UWMP Revisions into GMP Updates				√										√		√		√
Incorporate Multi-Agency and -Oganization Integration into GMP				√				√	√					√	√	√		√
Plan for Climate Change		√		√				√										√
Multi-Benefit Actions & Activities				√				√				√		√		√		

Table 5-2. Existing Monitoring Program.

Parameter Monitored	**Program**
Groundwater Levels (variable monitoring frequency)	CASGEM - 36 private water wells, dedicated monitoring wells and inactive municipal supply wells DWR – 27 private wells PRMD - 10 public supply wells
Groundwater Quality (varied sampling)	
Specific Conductance	DWR – private wells
General Minerals	DWR – private wells
Drinking Water Title 22 Analytes	Public & private water supply wells
Land Surface Subsidence	3 Plate Boundary GPS Stations
Surface Water	12 Streamflow Gauging Stations
Rainfall Monitoring	15 Weather Stations

Table 5-3. Streamflow Gaging Information, Plan Area.

Station ID	Station Name	Begin Date	End Date	Status
USGS 11465500	MARK WEST C NR WINDSOR CA	10/1/06	4/30/08	Inactive
USGS 11465660	COPELAND C A ROHNERT PARK CA	10/1/06	Active	Active
USGS 11465680	LAGUNA DE SANTA ROSA A STONY PT RD NR COTATI CA	11/6/98	Active	Active
USGS 11465690	COLGAN C NR SANTA ROSA CA	10/1/06	Active	Active
USGS 11465700	COLGAN C NR SEBASTOPOL CA	11/7/98	Active	Active
USGS 11465750	LAGUNA DE SANTA ROSA C NR SEBASTOPOL CA	11/18/98	Active	Active
USGS 11466065	BRUSH C A SANTA ROSA CA	10/1/05	4/30/10	Inactive
USGS 11466170	MATANZAS C A SANTA ROSA CA	10/1/04	Active	Active
USGS 11466200	SANTA ROSA C A SANTA ROSA CA	10/1/39	Active	Active
USGS 11466320	SANTA ROSA C A WILLOWSIDE RD NR SANTA ROSA CA	12/9/98	Active	Active
USGS 11466800	MARK WEST C NR MIRABEL HEIGHTS CA	10/1/05	Active	Active
CEMAR MW 01	MARK WEST CREEK BELOW TARWATER ROAD	10/1/10	Active	Active
CEMAR MW 02	MARK WEST CREEK ABOVE PORT CREEK	9/25/12	Active	Active
CEMAR MW 06	MARK WEST CREEK AT NEAL CREEK	9/25/12	Active	Active

Table 5-4. Weather Station Information, Plan Area.

ID	Active?	Data Source	Agency	Data Availability	Reporting Interval
KSTS	Yes	NWS Mesonet	NWS/FAA		Hourly
DW9521	Yes	NWS Mesonet	APRSWXNET/CWOP		5 Min
DW2144	Yes	NWS Mesonet	APRSWXNET/CWOP		15 Min
CW1766	Yes	NWS Mesonet	APRSWXNET/CWOP		15 Min
RSAC1	Yes	NWS Mesonet	RAWS		Hourly
CW6940	Yes	NWS Mesonet	APRSWXNET/CWOP		10 Min
CW3628	Yes	NWS Mesonet	APRSWXNET/CWOP		20 Min
DW9840	Yes	NWS Mesonet	APRSWXNET/CWOP		15 Min
CW0677	Yes	NWS Mesonet	APRSWXNET/CWOP		10 Min
KF6YUA	Yes	NWS Mesonet	APRSWXNET/CWOP		10 Min
Santa Rosa	Yes	NOAA	Earth System Research Laboratory		
Meachum LFI	Yes	NOAA	Earth System Research Laboratory		
CIMIS #158	Yes	UC Davis	CIMIS	12/24/2000 - on-going	Daily
CIMIS #83	Yes	UC Davis	CIMIS	2/14/1989 - on-going	Daily
NCDC #7965	Yes	UC Davis	NCDC	1/1/1951 - on-going	Daily
CIMIS #103	Yes	UC Davis	CIMIS	12/14/1990 - on-going	Daily

DRAFT Table 6-1 - Management Components and Recommended Actions - Plans for Years 1 to 5 DRAFT

Action No.	Recommended Actions	Year 1	2	3	4	5
5.1.1 Stakeholder Involvement						
5.1.1 Involving the Public						
1	1) Circulate copies and publish the adopted Plan and updates	√	√	√	√	√
2	2) Develop informational flyer and distribute	√				
3	3) Develop and execute a Pubic Outreach Plan for Plan implementation	√	√	√	√	√
4	4) Develop outreach information for the public	√				
5	5) Conduct public forums at key milestones	√	√	√	√	√
6	6) Maintain email and postal mail lists to announce meetings and other information	√	√	√	√	√
7	7) Invite interested parties to participate in Panel meetings	√	√	√	√	√
8	8) Meet with interested organization representatives periodically to receive input	√	√	√	√	√
9	9) Meetings, coordination, and communication	√	√	√	√	√
5.1.2 Advisory Groups						
10	1) Review Panel & TAC membership	√	√	√	√	√
11	2) Conduct Panel Quarterly Meetings	√	√	√	√	√
12	3) Conduct TAC monthly meetings	√	√	√	√	√
5.1.3 Informing Stakeholders & Public Agencies						
13	1) Continue to maintain and further develop relationships	√	√	√	√	√
14	2) Coordinate and inform land use and water resources planning	√	√	√	√	√
15	3) Conduct briefings with elected officials who have adopted the Plan	√	√	√	√	√
16	4) Provide information to increase public awareness of water supplies	√	√	√	√	√
5.1.4 Partnerships & Coordination						
17	1) Continue to promote partnerships	√	√	√	√	√
18	2) Coordinate Plan implementation activities and collaborate with local groups	√	√	√	√	√
19	3) Coordinate efforts to seek grant funding for Plan recommended actions	√	√	√	√	√
5.2.1 Monitoring Program & Modeling						
5.2.1.1 Groundwater Level Monitoring						
20	1) Conduct systematic, coordinated groundwater elevation monitoring of existing programs and assess groundwater elevations on an annual basis	√	√	√	√	√
21	2) Develop an outreach program to obtain groundwater level data from volunteer private well owners, private producers, and mutual water companies	√				
22	3) Coordinate with local, state and federal agencies to investigate opportunities to develop better information on groundwater level monitoring	√	√	√	√	√
23	4) Expand existing groundwater level monitoring network to establish an expanded long-term monitoring well network			√	√	√
5.2.1.2 Groundwater Quality Monitoring						
24	1) Assess water quality on an annual or biennial basis for trends, conditions and adequacy of the groundwater quality monitoring network	√	√	√	√	√
25	2) Identify opportunities to capture and integrate existing water quality data for areas where current data is insufficient	√	√			
26	3) Integrate other monitoring programs established through efforts such as the NCRWQCB Dairy Program, recycled water and the Salt and Nutrient Management Plan	√	√			
27	4) Establish and fund a basin-wide, standardized, coordinated, long-term groundwater quality monitoring network in conjunction with groundwater level monitoring				❖	❖
5.2.1.3 Land Subsidence Monitoring						
28	1) Identify the available data related to potential inelastic land subsidence due to groundwater extraction in the Plan Area	√	√			
29	2) Evaluate potential benchmark locations for periodic monitoring of land subsidence related to groundwater extraction in the Plan Area	√	√			
30	3) Develop an outreach program for City, County and other institutions responsible for infrastructure to provide information regarding likely indicators of subsidence			❖	❖	
31	4) Develop monitoring program and network for assessing the potential for inelastic land subsidence due to groundwater extraction					❖
5.2.1.4 Surface Water-Groundwater Interaction Monitoring						
32	1) Continue to compile available stream gauge data and information on tributary flows in the Plan Area	√	√	√	√	√
33	2) Determine current surface water quality sampling being conducted in the Plan Area	√				
34	3) Project to analyze and as necessary re-activate existing stream gauges and install new gauges in the Plan Area			❖		

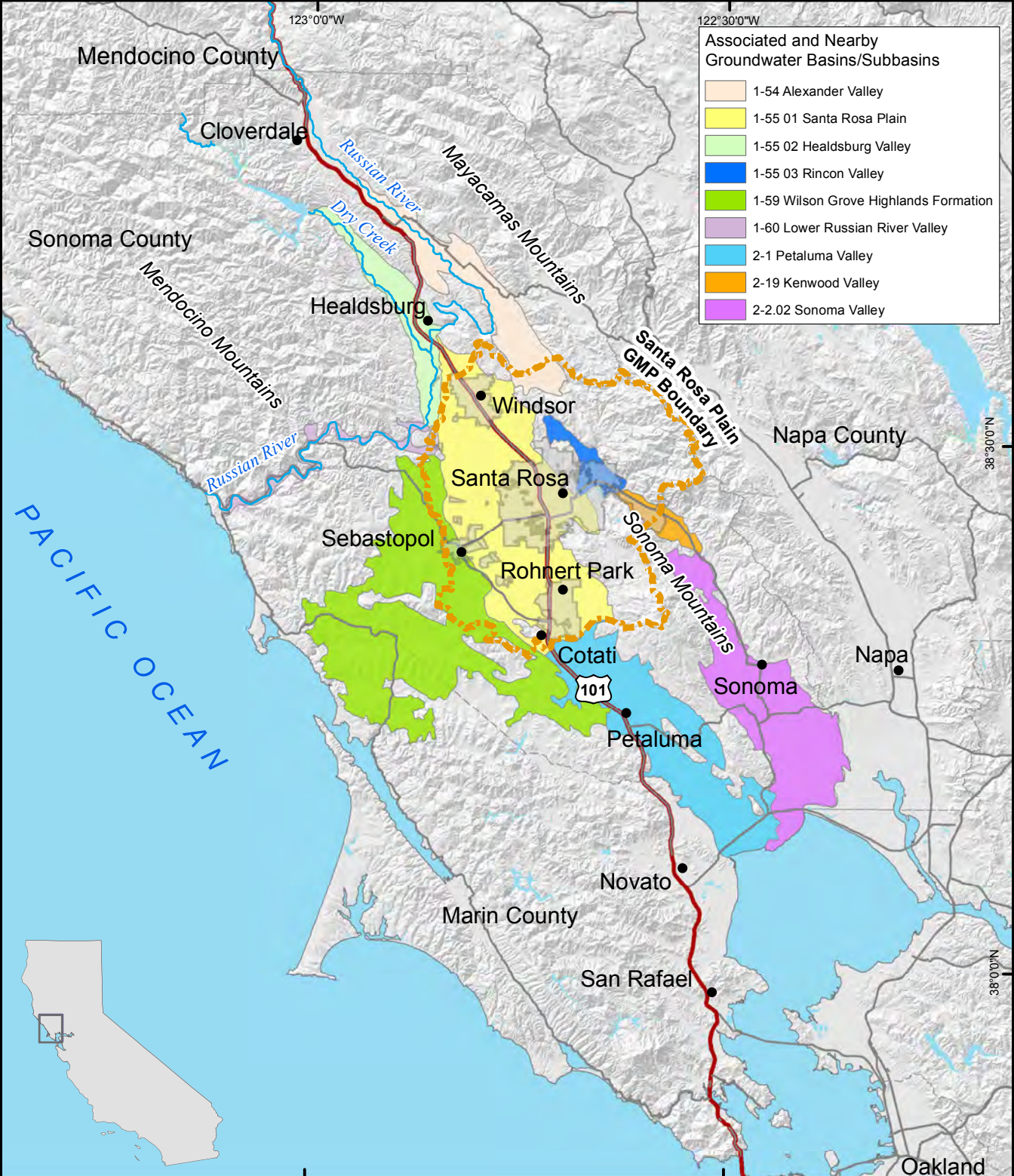
35	4) Project to install new shallow monitoring wells along major watercourses				❖	
36	5) Project to conduct seepage runs along major watercourses				❖	
37	6) Project to study stable isotope study to understand surface water-groundwater flow					❖
5.2.1.5	**Hydrometeorological Monitoring**					
38	1) Develop inventory of existing hydrometeorological stations including sensors, data collection and management protocols, and plans for future expansion	√				
39	2) Develop a protocol and work plan for compiling rainfall data on a water-year basis to develop isohyetal maps as warranted			❖		
40	3) Evaluate rainfall data distribution and determine the need for additional data			❖		
41	4) Identify and develop strategies for collecting hydrometeorological data needs for the surface water-groundwater flow model			❖		
5.2.1.6	**Monitoring & Reporting Protocols**					
42	1) Develop a schedule to coordinate the time of sampling and the sampling interval (time between samples) to ensure consistent data collection frequency	√				
43	2) Use a Standard Operating Procedure (SOP) for the collection of groundwater level data for wells	√				
44	3) Provide DPH guidelines on the collection, pretreatment, storage, and transportation of water samples intended for water quality analyses	√				
45	4) Develop field and office quality assurance practices for the program	√				
46	5) At the onset of the GMP monitoring program, prepare and distribute a stand-alone Sampling and Analysis Plan	√	√			
47	6) Provide training on water level sampling to volunteer well owners as needed	√				
48	7) Coordinate the various existing and planned monitoring efforts to ensure uniform, standard water quality data collection protocols are followed		❖			
5.2.1.7	**Data Management**					
49	1) Maintain and update the central GIS data management system including GIS layers and other data formats	√	√	√	√	√
50	2) Work with cooperating agencies, and any other non-governmental entity, to provide data for updating the database periodically	√	√	√	√	√
51	3) Adopt flexible, standard formats for data collection, transfer protocols, reporting, and quality assurance-quality control checks for regular data updates	√				
52	4) Use the GIS data management system to assist in periodic data evaluations and prepare the Periodic Plan report summarizing groundwater conditions	√	√	√	√	√
53	5) Project to compile, screen and review State Department of Public Health, DWR Well Logs and PRMD records as an additional data source			❖		
54	6) Make data in the GIS data management system data publically available to Plan Area stakeholders and the wider public, while protecting any confidential information			❖		
55	7) Project to develop and coordinate related data including GIS layers and other data formats on topics				❖	❖
5.2.2	**Groundwater Modeling**					
56	1) Develop and run groundwater management scenarios using the model to assess the benefits of different recommended actions and options	√				
57	2) Assess optimal hydrologic monitoring locations to help best address the most significant model limitations and uncertainties		√			
58	3) Periodically update the integrated surface water-groundwater flow model (GSFLOW) including GIS layers and other data formats					❖
5.3	**Groundwater Protection**					
5.3.1	**Maintain Groundwater Levels**					
59	1) Should monitoring data indicate persistent groundwater level declines, provide notifications to groundwater users regarding declining trends					❖
60	2) Support and enhance water conservation goals for reducing groundwater demands, with local and region-wide incentive programs				❖	
61	3) Evaluate historical groundwater level trends in the Plan Area, and identify subareas and scenarios that are more vulnerable to groundwater level declines			❖		
62	4) Provide information to the public on the importance of groundwater monitoring, maintaining groundwater levels and promote voluntary groundwater level monitoring			❖		
63	5) Where feasible, promote and support small- and large-scale groundwater recharge, water conservation and increased recycled water use			❖	❖	❖
5.3.2	**Prevent Adverse Interactions Between Surface Water and Groundwater**					
64	1) Encourage activities that protect surface water quality with a particular focus on areas where surface water recharges groundwater			❖		
65	2) Support a surface water-groundwater interaction monitoring program to better understand the potential for adverse interactions and identify vulnerable areas				❖	
66	3) Where reductions in streamflow related to shallow groundwater level declines may be identified, inform local stakeholders and encourage adaptive activities					
5.3.3	**Well Construction, Maintenance, Protection, Abandonment and Destruction**					
67	1) Review Chapter 25B and provide suggestions to PRMD on the well permit application requirements to improve the collection of hydrogeologic information	√				
68	2) Identify management approaches that can be used to protect the water supply from potentially contaminating activities			❖		
69	3) Conduct an inventory and survey of active and inactive wells in the Plan Area to identify potential abandoned wells, & develop an approach for possible grant funding					❖
70	4) Distribute the Wellness Guide to local well owners within the Plan Area**			❖		
71	5) Provide recommendations, as appropriate, to Sonoma County on well construction and destruction for well owners, operators, well drillers and service providers			❖		
72	6) Review the USGS report on the Santa Rosa Plain (USGS, 2013) and provide information and maps on groundwater conditions to the County			❖	❖	
73	7) Conduct a study to obtain better information during well installations by designing a program to obtain better hydrogeologic information on new well completions				❖	❖

5.3.4 Mapping and Protecting Groundwater Recharge Areas						
74	1) Provide the groundwater recharge area map to and meet with PRMD, the County and local planning agencies	√				
75	2) Provide recommendations on the areas that are most vulnerable to loss of recharge capacity and to water quality impacts from land use activities			❖		
76	3) Collaborate with local organizations to encourage protection and preservation of recharge areas				❖	
77	4) When new developments are planned for primary recharge zones, encourage designs that maintain or increase the site's pre-development absorption of runoff				❖	❖
78	5) Discourage land use activities in recharge areas that have higher potential to contaminate groundwater resources				❖	❖
79	6) Periodically update the recharge area map as new information becomes available through future studies and monitoring programs					❖
5.3.5 Evaluate Distribution and Remediation of Contaminated Groundwater						
80	1) Provide rural well owners with Sonoma County Department of Health Services guide, *What You Need to Know About Water Quality in Your Well***	√				
81	2) Coordinate periodically with the RWQCB and Sonoma County Environmental Health Department regarding any new reports of groundwater contaminant sites		√			√
82	3) Incorporate GIS layers showing mapped contaminant plumes and contaminant sites, supplied by RWQCB and Sonoma County Environmental Health Department			❖		
83	4) Share available information on impacted wells, mapped contaminant plumes and contaminant sites with licensed water system operators and private well owners			❖		
5.3.6 Identify and Provide Information to the Public on Groundwater Protection						
84	1) Conduct a periodic forum on groundwater in the Plan Area and develop & make available educational materials in hard copy, electronic for web-based sites			❖		❖
85	2) Review and as necessary and appropriate, update *WELLness – A Guide to You Water Well* to address the Plan objective for this management component			❖		
5.4 Increase Conservation & Efficiency						
5.4.1 Continue and Increase BMPs for Urban Water Conservation						
86	1) Continue implementing, maintaining, updating and reporting annually CUWCC BMPs, as appropriate, for urban areas**	√	√	√	√	√
87	2) Increase water use efficiency and demand reduction by shifting landscape irrigation to evenings; include development of educational materials and public outreach			❖		
88	3) Assess current successes and develop potential options to increase BMPs for urban water conservation					❖
5.4.2 Voluntary Water Conservation BMPs for Unincorporated Areas						
89	1) Develop water conservation BMPs for voluntary non-viticulture agricultural and agricultural-residential water users & additional measures for agricultural operations		√			
90	2) Develop program, incentives and funding for voluntary implementation of CUWCC water conservation BMPs in unincorporated County areas not served by Contractors				❖	
91	3) Develop incentives for conservation BMP retrofits in unincorporated County areas not served by Contractors			❖		
92	4) Encourage viticulture agriculture to increase water conservation by using the Code of Sustainable Winegrowing Practices Workbook			❖		
5.5 Increase Groundwater Recharge						
5.5.1 Stormwater Recharge by Infiltration						
93	1) Evaluate the success of local agencies stormwater management efforts over the past 10 years, to define where additional effort is appropriate			❖		
94	2) Conduct feasibility level analysis and pilot scale testing of stormwater capture and groundwater recharge**			❖		
95	3) Project to develop and implement pilot-scale and subsequent large-scale projects to recharge groundwater with stormwater runoff capture and rainfall harvesting					❖
96	4) Collect and analyze stream gauge data to evaluate potential stormwater capture projects				❖	
97	5) Incorporate water quality sampling of high flow surface water and storm water flows on project specific basis for recharge					❖
98	6) Project to make controlled releases of captured stormwater to streams when conditions are dry in order to maximize the aquifer recharge and improve fish habitat					❖
5.5.2 Aquifer Storage and Recovery and Groundwater Banking						
99	1) Conduct pilot scale testing of groundwater banking using drinking water from the Russian River to assess feasibility and potential benefits of implementation**		❖			
100	2) Based on results from ASR pilot, assess the need for additional studies to further evaluate project- and regional opportunities for expanded conjunctive use			❖		
101	3) Develop and implement full-scale ASR groundwater banking projects that use wet season and wet year Russian River drinking water for groundwater banking					
5.5.3 Surface Water Use In Lieu of Groundwater						
102	1) Evaluate potential funding opportunities for an in lieu recharge program			❖	❖	
103	2) Develop an integrated surface water/groundwater supply program to guide the conjunctive use of surface water and groundwater in a coordinated fashion					❖
5.5.4 Low Impact Development (LID) in New Construction						
104	1) Provide information to local community planners and developers on the Water Smart Development Guide and promote LID in new construction		√			
105	2) Provide information to rural property on the *Slow It Spread It Sink It Guide* and promote LID in rural settings	√				
106	3) Develop incentives for local communities to employ LID in new construction such as reduced connection and permitting fees				❖	
5.6 Increase Water Reuse						
5.6.1 Increase Recycled Water for Agricultural Irrigation						
107	1) Where feasible, promote and support increased recycled water use for large and small scale agricultural irrigation to reduce groundwater demands**			❖	❖	❖

108	2) Coordinate with local wastewater treatment plant operators to catalogue current operations and agricultural recycled water applications in the Plan Area			❖	❖	❖
109	3) Evaluate opportunities for the use and storage of recycled water for agriculture during the wet season, and subsequent use during the dry season					❖
110	4) Provide ongoing public education and outreach to local communities regarding recycled water use for agricultural irrigation, and to gage and address public concerns				❖	❖
5.6.2	**Increase Recycled Water for Landscape Irrigation**					
111	1) Promote and develop incentives for the installation of purple piping in new developments in areas where recycled water availability may increase					❖
112	2) Provide ongoing public education and outreach to local communities to continue to promote expansion of recycled water use, and to gage and address public concerns				❖	
113	3) Coordinate with local wastewater treatment plant operators to catalogue current operations and landscape recycled water applications in the Plan Area			❖	❖	❖
114	4) Evaluate opportunities for the use and storage of recycled water for landscape irrigation during the wet season, and subsequent use during the dry season					❖
5.6.3	**Graywater for Domestic Landscape Irrigation**					
115	1) Make information available to the public that graywater systems are eligible for financing under the Sonoma County Energy Independence Program			❖	❖	❖
116	2) Encourage and promote expanded graywater use by local authorities providing financial incentives such as rebates, low-interest financing and free technical support				❖	❖
117	3) Develop and make readily available educational material to help ensure that homeowners properly install and maintain graywater systems with backflow prevention				❖	❖
118	4) Encourage and promote local agencies and communities to develop plans and policies regarding graywater permitting requirements and public education efforts				❖	❖
5.7	**Integrated Water Planning & Management**					
5.7.1	**Groundwater Management and Land Use Planning**					
119	1) Brief local agency planning departments periodically on groundwater management program activities and milestones	√	√	√	√	√
120	2) Conduct an annual or biennial meeting between the Plan Panel and TAC and local agency planners in the Plan Area to exchange information etc.	√	√	√	√	√
5.7.2	**Monitor and Track UWMP Progress and Incorporate Revisions into GMP Updates**					
121	1) Obtain updates of all UWMPs prepared in the Plan Area every five years					√
122	2) Incorporate updated UWMP information into the GMP every five years					√
5.7.3	**Incorporate Multi-Agency and -Organization Integration into GMP**					
123	1) Develop inventory of and provide GMP info to all agencies and organizations with water-related interests, mandates or jurisdiction within the Plan Area			❖		
124	2) Conduct workshops to identify opportunities for integrating overlapping or supporting interests to optimizing efforts, resources, and outcomes			❖		
5.7.4	**Plan for Climate Change**					
125	1) Provide information to increase public awareness of current and future water supplies, demands, and trends in reliability related to a changing climate**			❖		
126	2) Provide information on projected climate changes in the Plan Area to federal, state, local agencies and other organizations involved with water and land use planning			❖		
127	3) Hold a facilitated workshop on climate change in the Plan Area involving federal, state and local agencies and organizations involved in water and land use planning				❖	
128	4) Develop possible adaptation measures to consider and implement.				❖	
5.7.5	**Multi-Benefit Actions and Activities**					
129	1) Identify funding opportunities, project criteria, and the schedule to apply for funds for multi-benefit activities, actions and projects for the Plan Area			❖		
130	2) Hold a TAC meeting focused on discussing future potential multi-benefit activities, actions and projects for the Plan Area				❖	
131	3) Prepare a list of Panel Principles to encourage the development of activities, projects and programs that provide multi-benefit outcomes			❖		
132	4) Develop an inventory of multi-benefit activities, actions and projects currently being implemented or planned in the Plan Area					❖

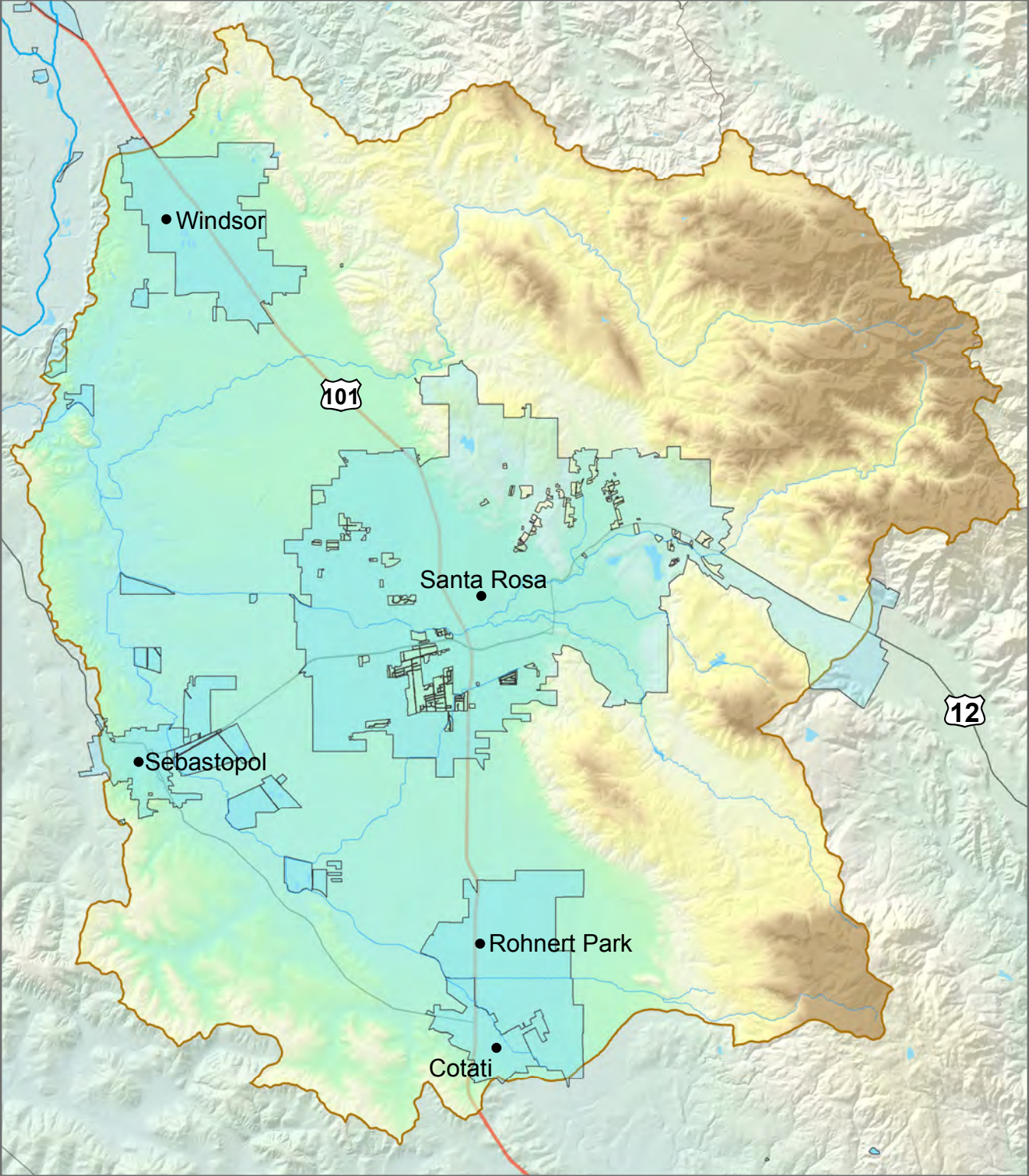
Notes:

√	-	Funded action for Year 1&2 (planned to be funded under cooperative agreement)
❖	-	Potential future action, pending the availability of funding and/or project sponsor
$$$	-	Indicates relative order magnitude cost ($$$ High, $$ Medium, $ Low)
*	-	Indicates relative cost has a long-term annual or periodic funding need
**	-	Indicates an activity or program that is already planned or in progress under a separate funding effort



Location of Santa Rosa Plain Watershed and Groundwater Basins & Sub-basins

Figure 1-1

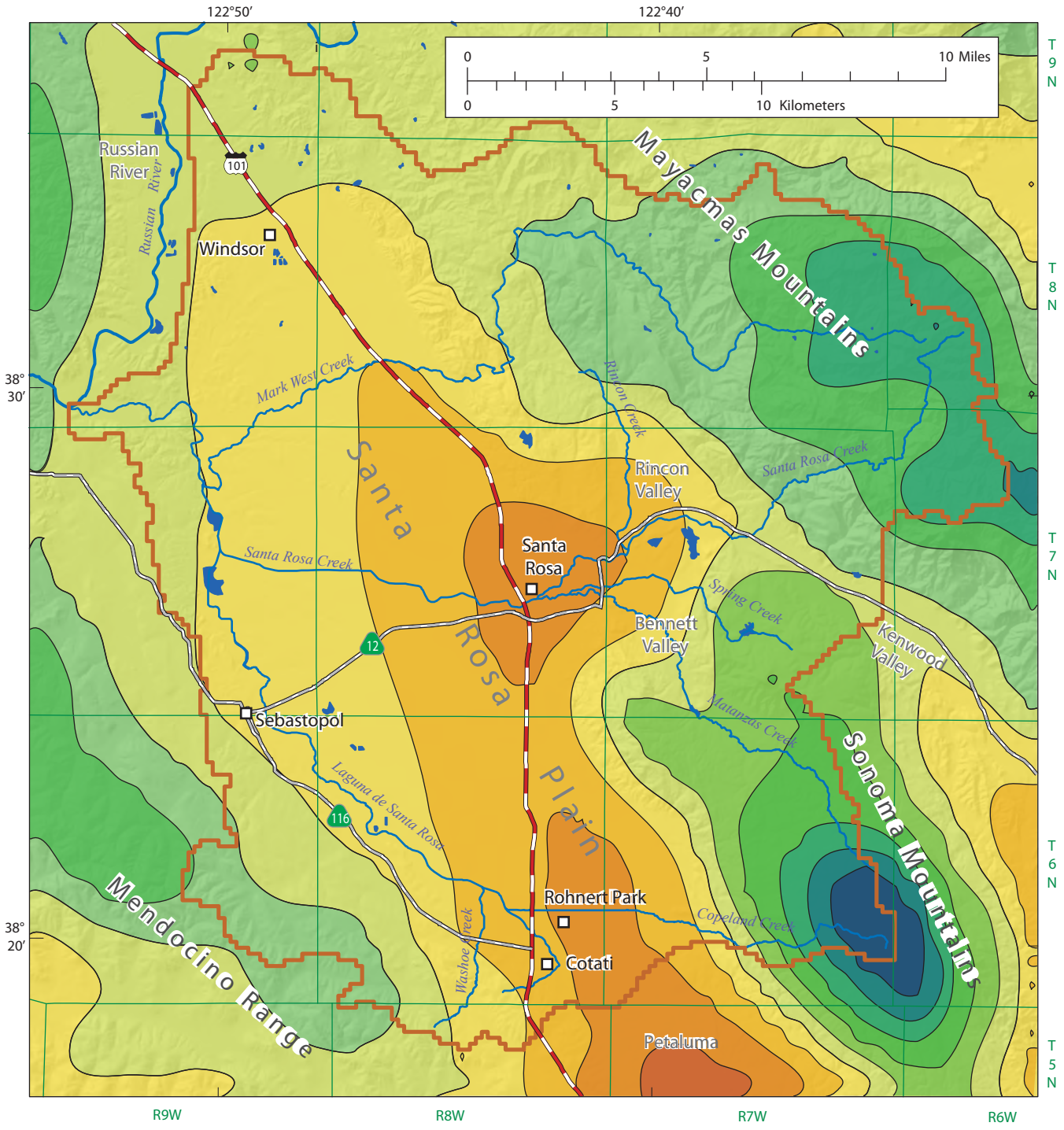


Plan Area and Jurisdictional Boundaries

0 1.25 2.5 5 Miles

N W E S

Figure 1-2



EXPLANATION

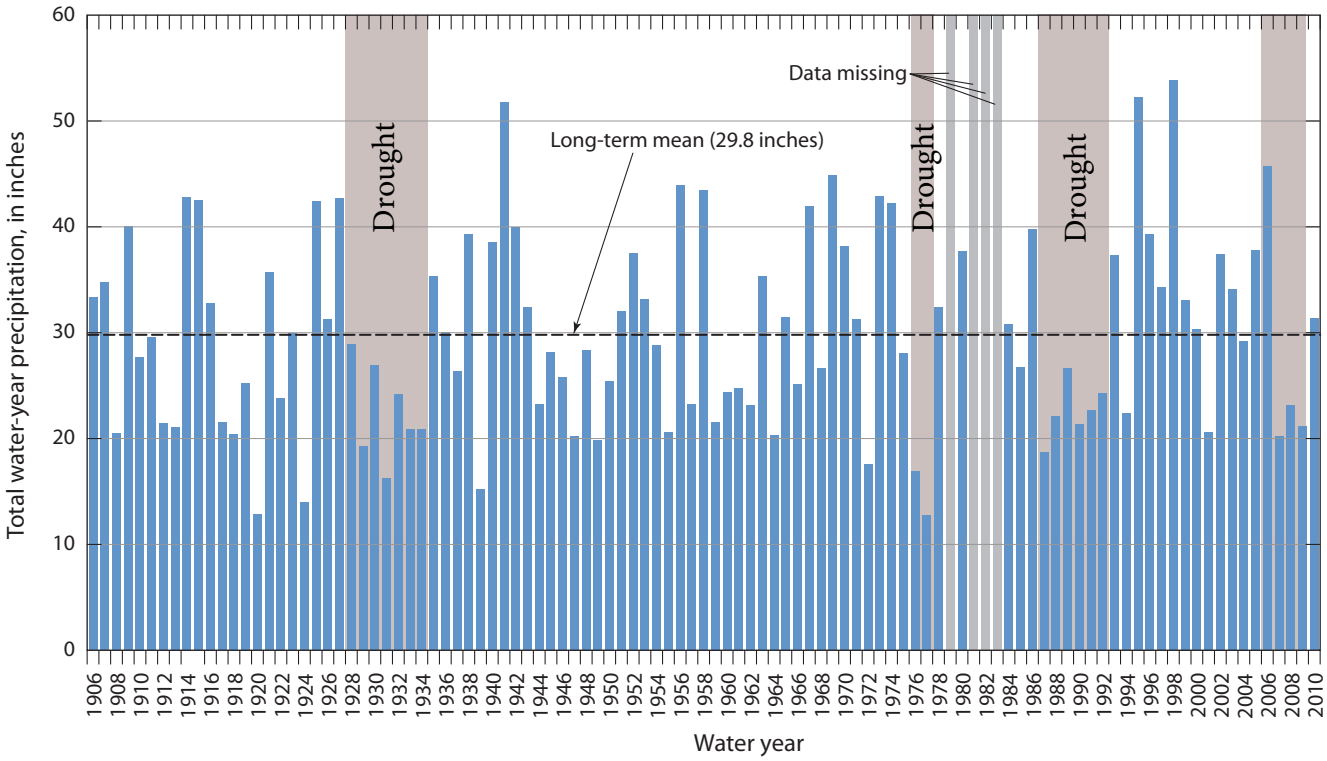
PRISM average annual precipitation, in inches

28.7 to 30	30.1 to 33	33.1 to 36	36.1 to 39	39.1 to 42	42.1 to 45
45.1 to 48	48.1 to 51	51.1 to 54	54.1 to 56.9		

Santa Rosa Plain watershed boundary

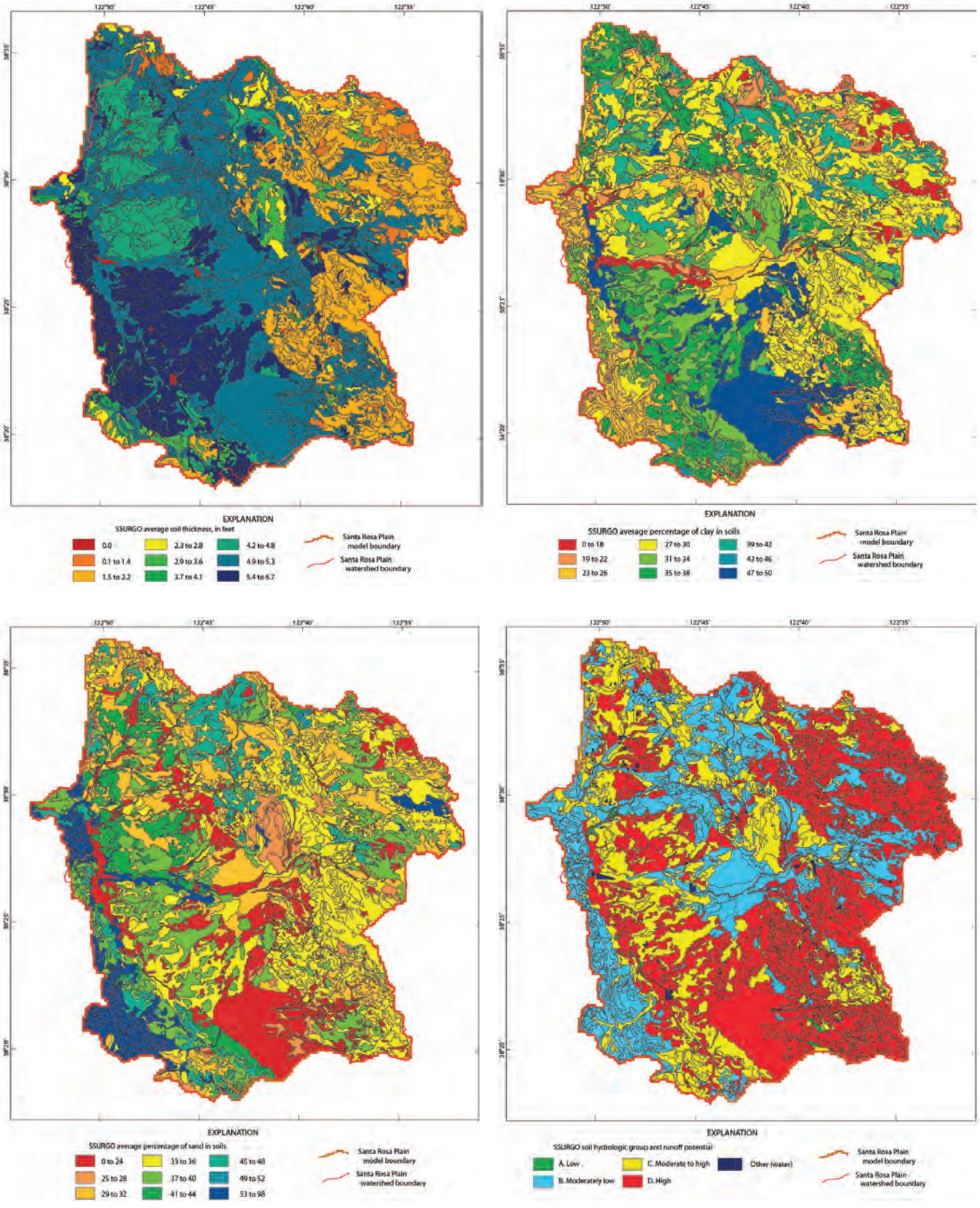
Precipitation Map

Figure 2-1

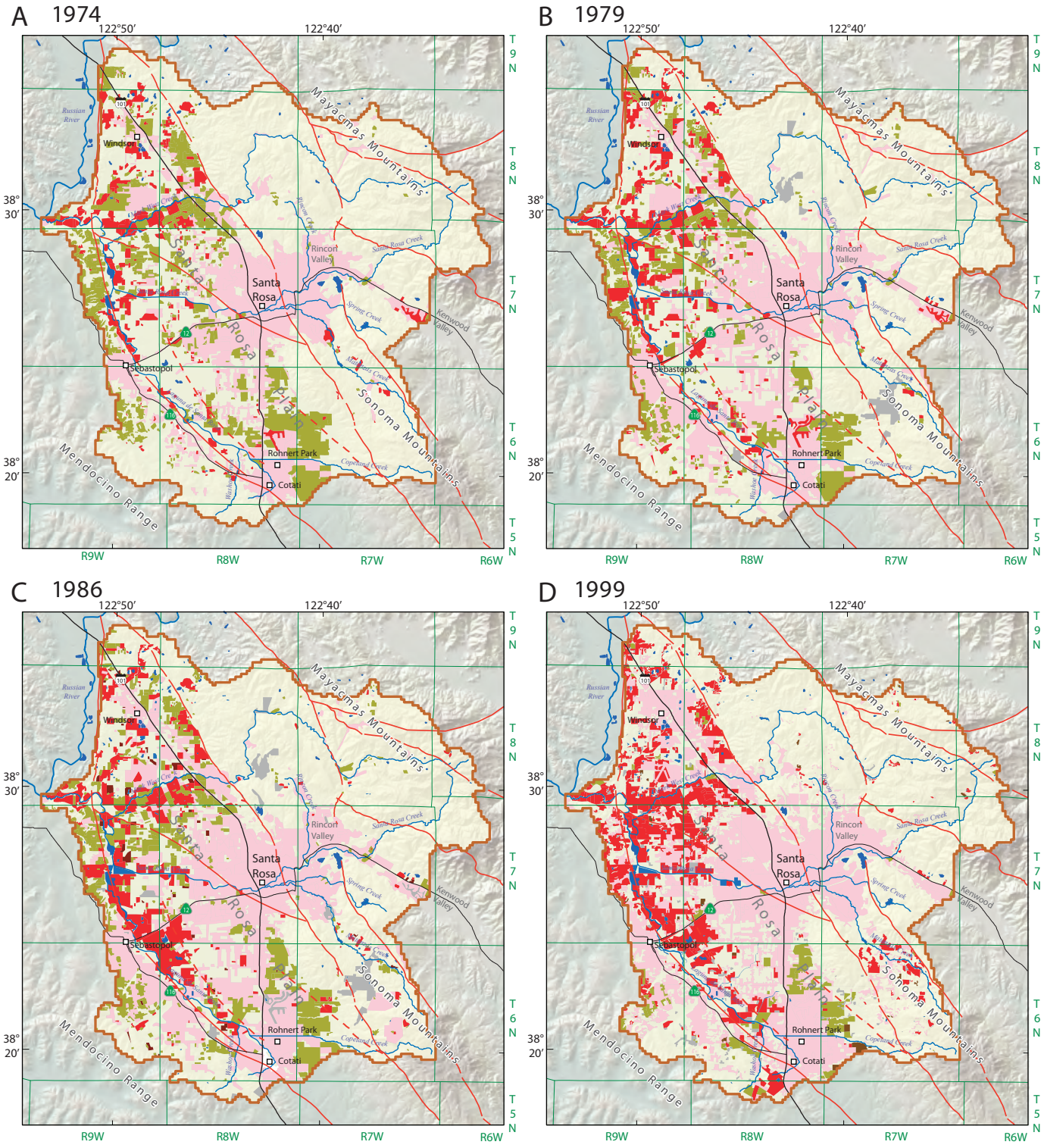


Drought data provided by "http://www.water.ca.gov/waterconditions/background.cfm"

Total Water Year Precipitation 1906-2010	Figure 2-2

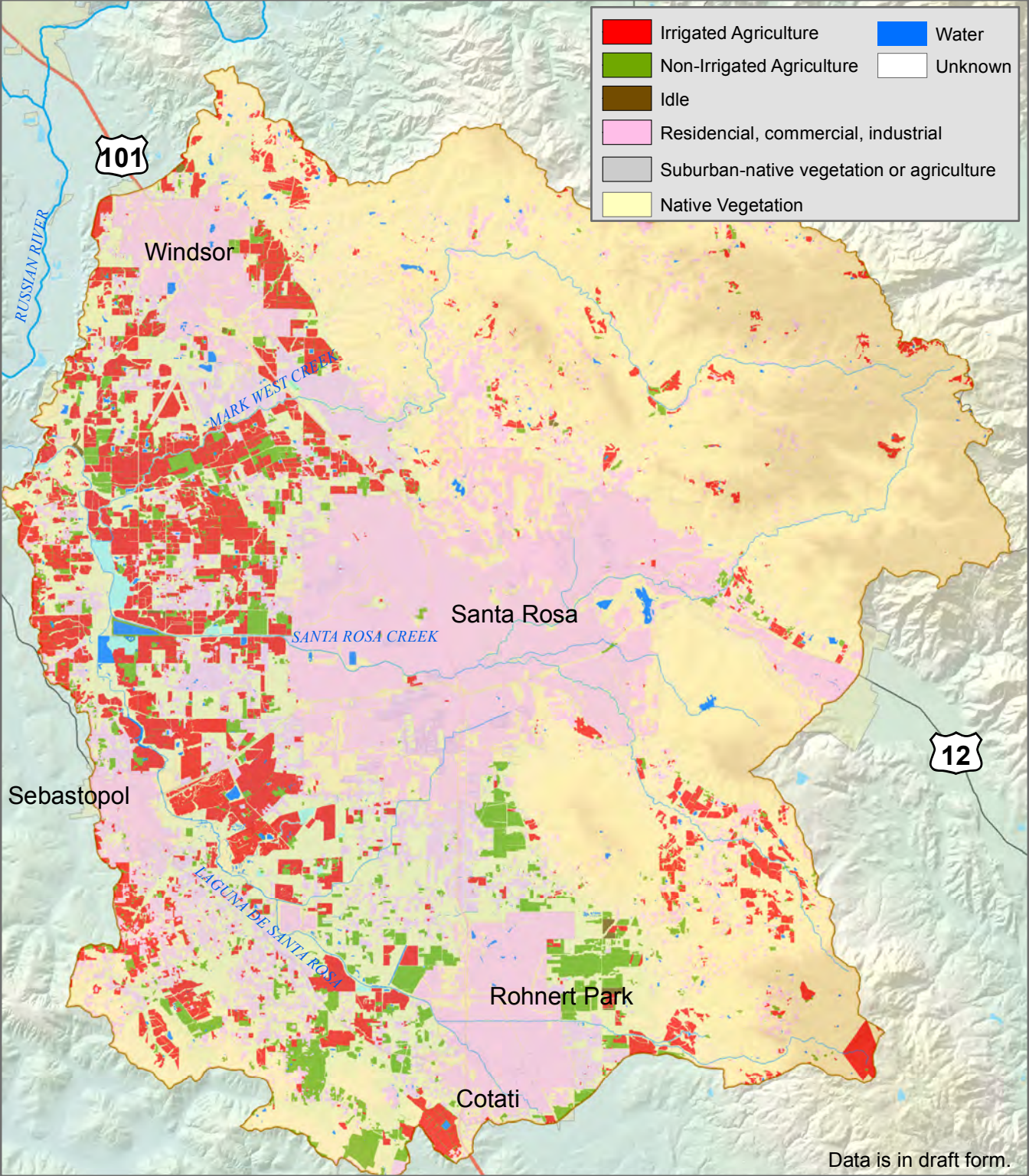


SSURGO Soil Maps for the Plan Area	Figure 2-3



Land Use Maps for 1974, 1979, 1986, and 1999 - California Department of Water Resources

Figure 2-4A

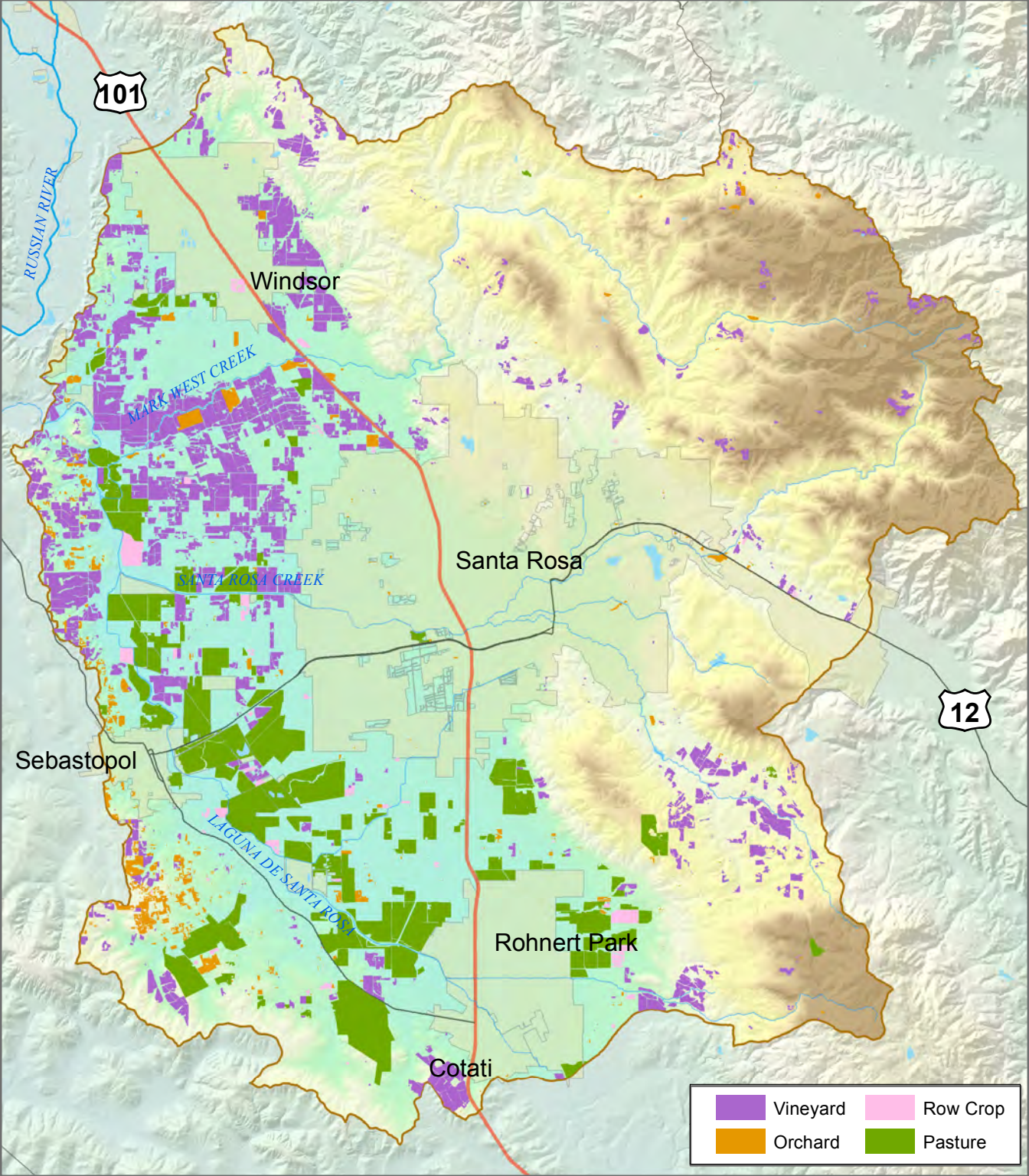


Land Use Map for 2012 - California Department of Water Resources

0 1.25 2.5 5 Miles

N W E S

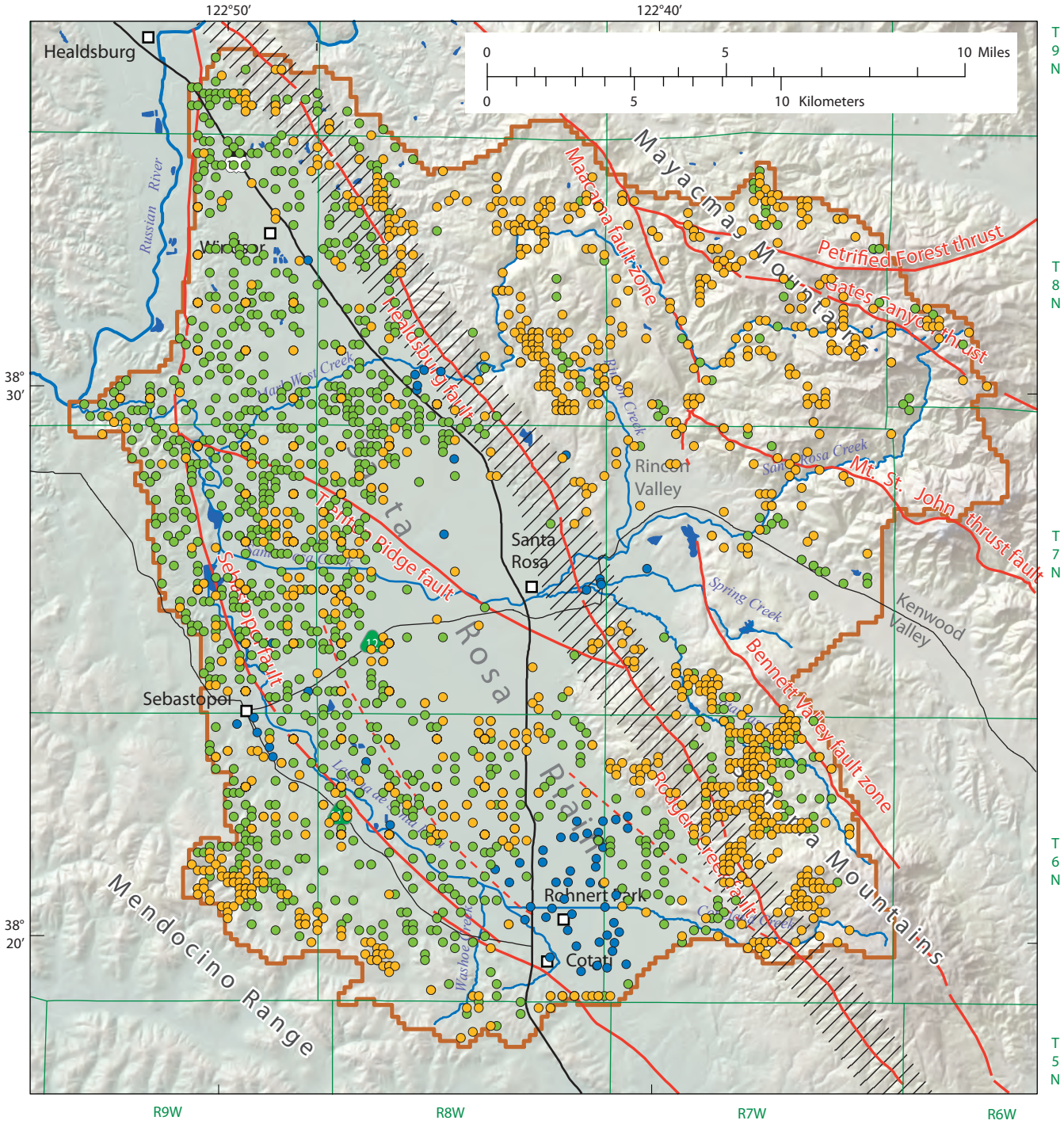
Figure 2-4B



Agricultural Land Use Map for 2008

0 1.25 2.5 5 Miles

Figure 2-5



Base from U.S. Geological Survey digital data, 1:1,000,000, downloaded 2003 State Plane Projection, Fipzone 402
Shaded relief base from 1:250,000 scale Digital Elevation Model: sun illumination from northwest at 30 degrees above horizon

EXPLANATION

- Rodgers Creek fault zone
- Inferred fault
- Domestic well
- Agricultural well
- Public-supply well

Location of Water Wells in the Plan Area

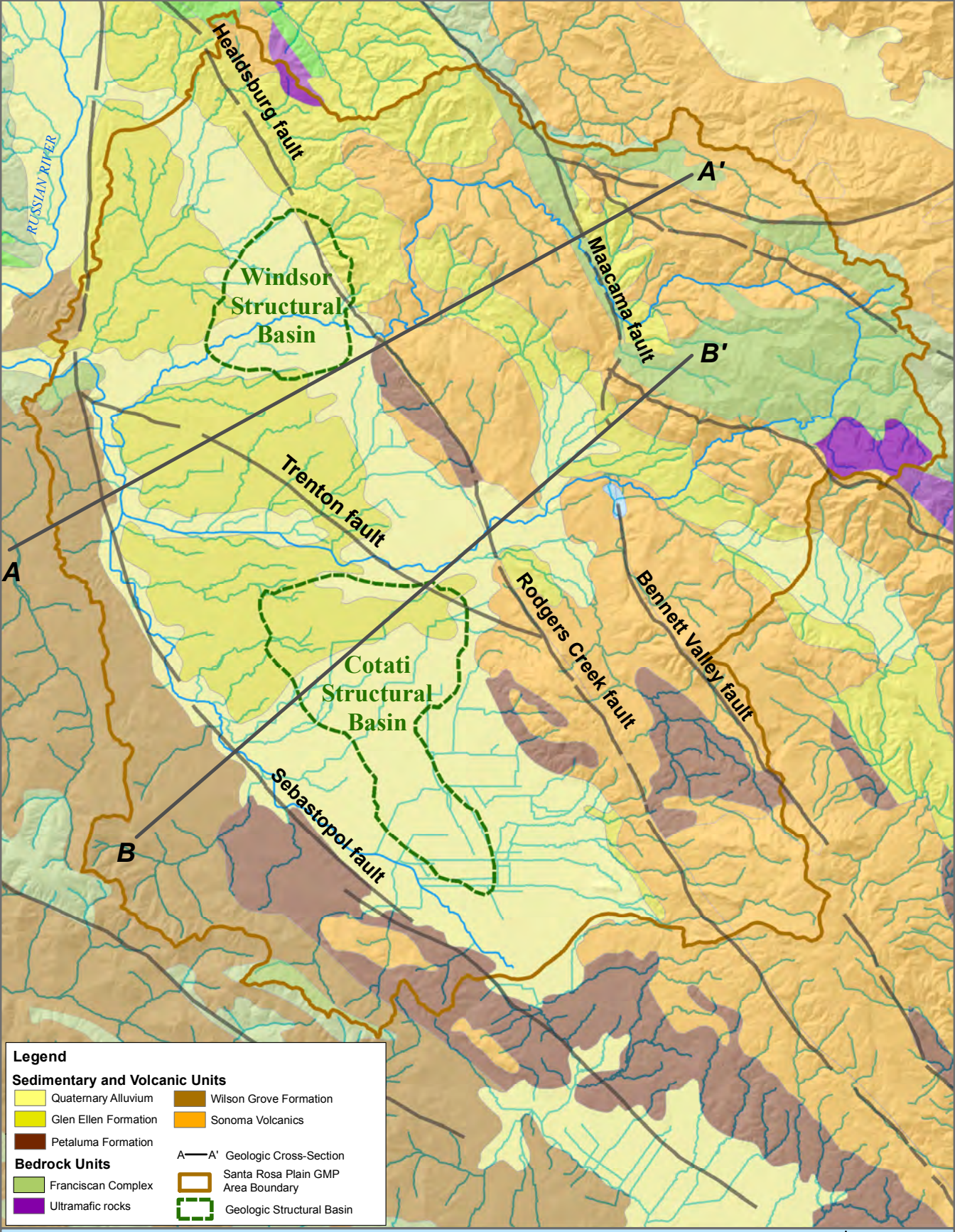
Figure 2-6

Russian River Watershed and Water Agency Facilities

0 5 10 20 Miles

N W E S

Figure 2-7

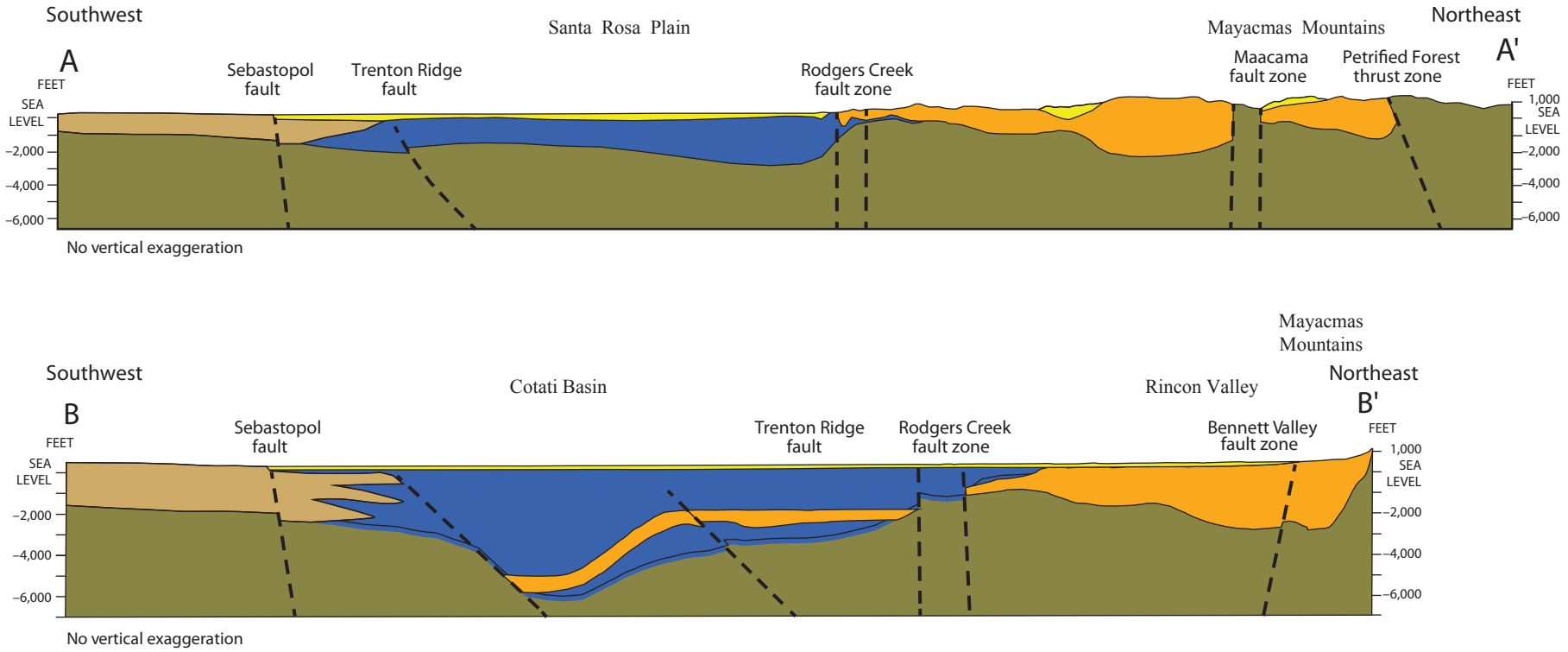


Geology of the Santa Rosa Plain Watershed

0 1.25 2.5 5 Miles

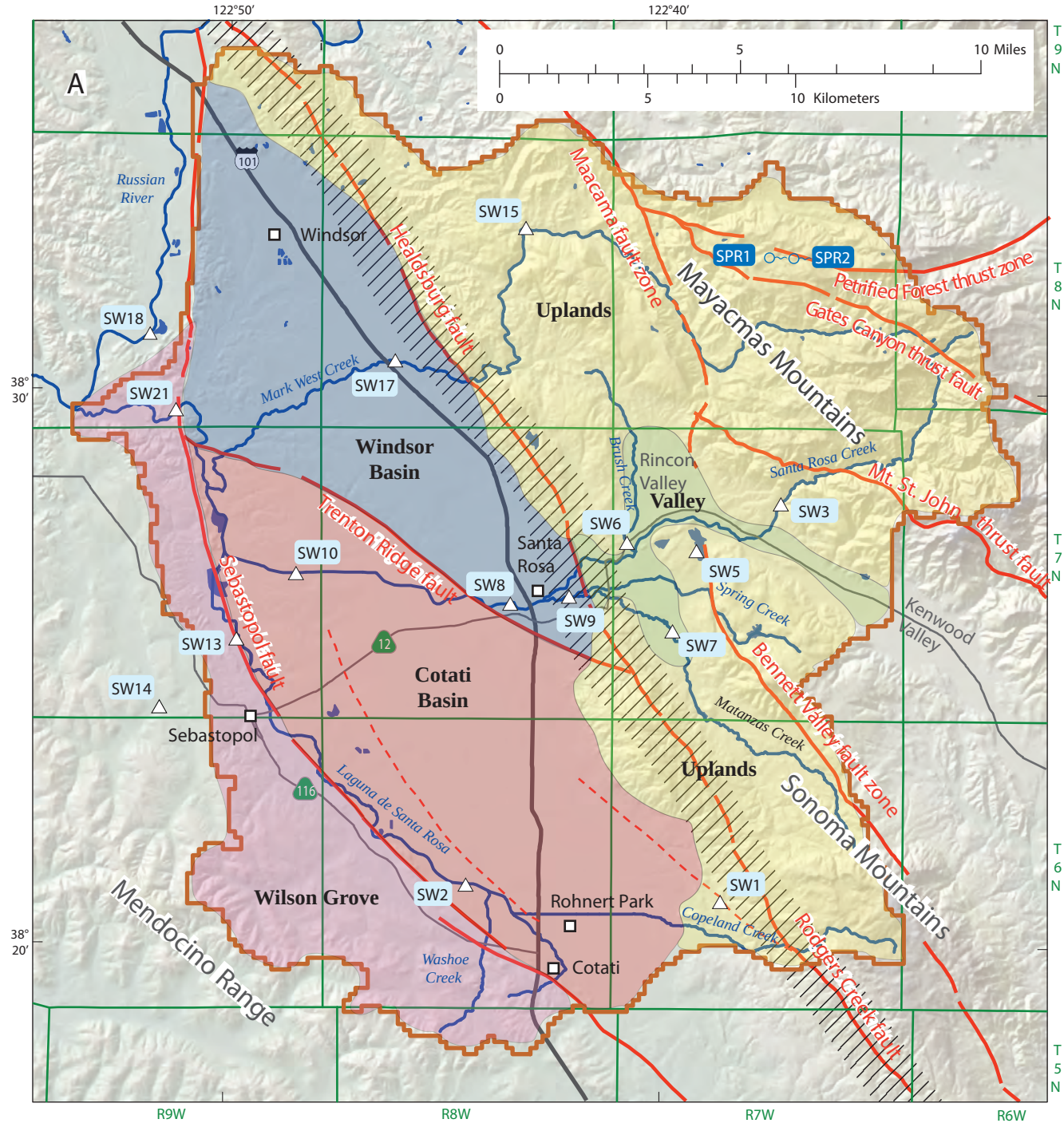
N W E S

Figure 2-8



Schematic West-East Geologic Cross Sections

Figure 2-9



Shaded relief derived from U.S. Geological Survey
National Elevation Dataset, 2006, Albers Equal Area Conic Projection

EXPLANATION

Groundwater storage units

- Cotati Basin
- Windsor Basin
- Valley
- Wilson Grove
- Upland

Rodgers Creek fault zone

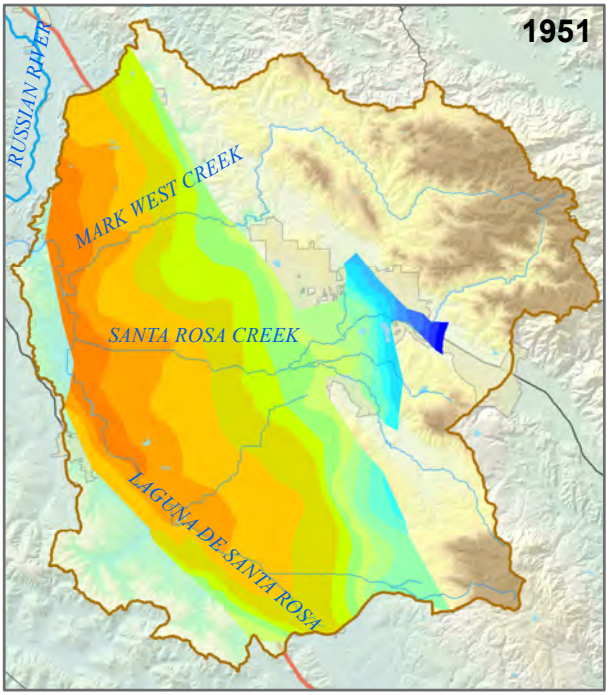
Inferred fault

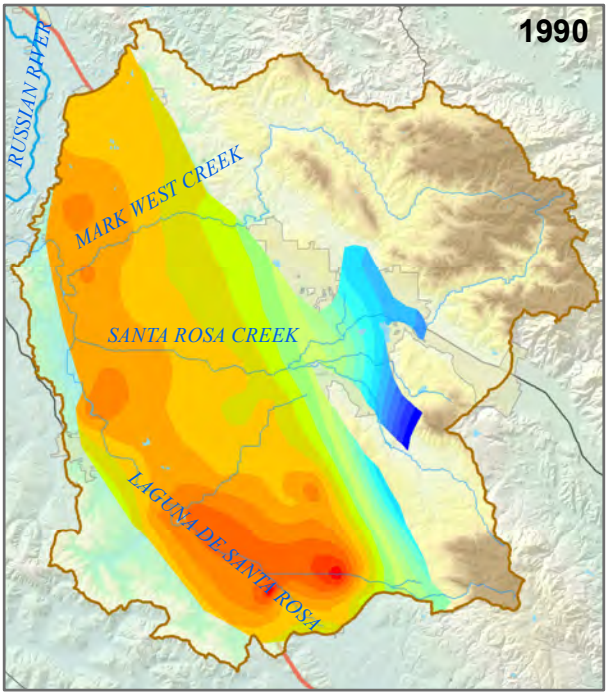
SPR2 Spring

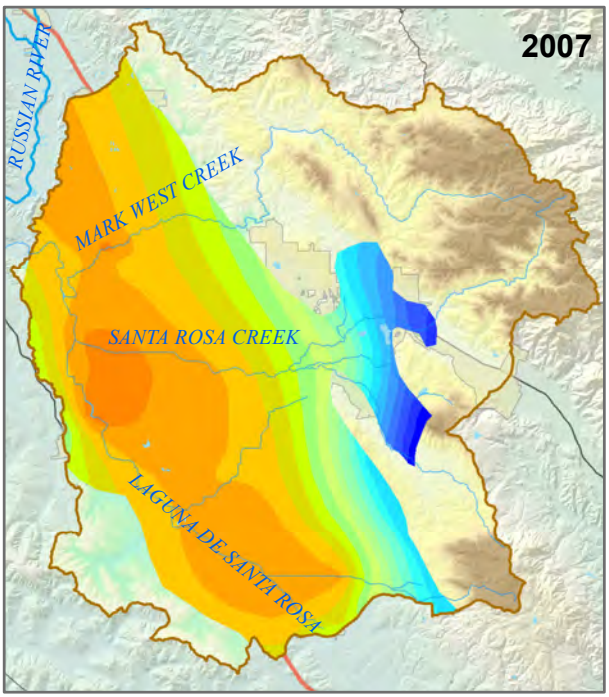
SW4 Surface-water site

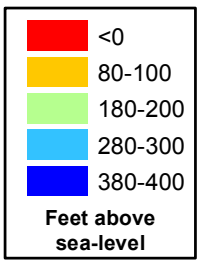
Hydrogeologic Subareas

Figure 2-10









Source: USGS, 2014

Groundwater Level Contours 1951, 1990, & 2007, Plan Area

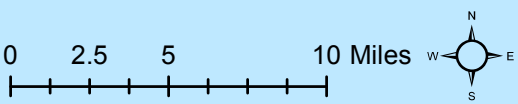
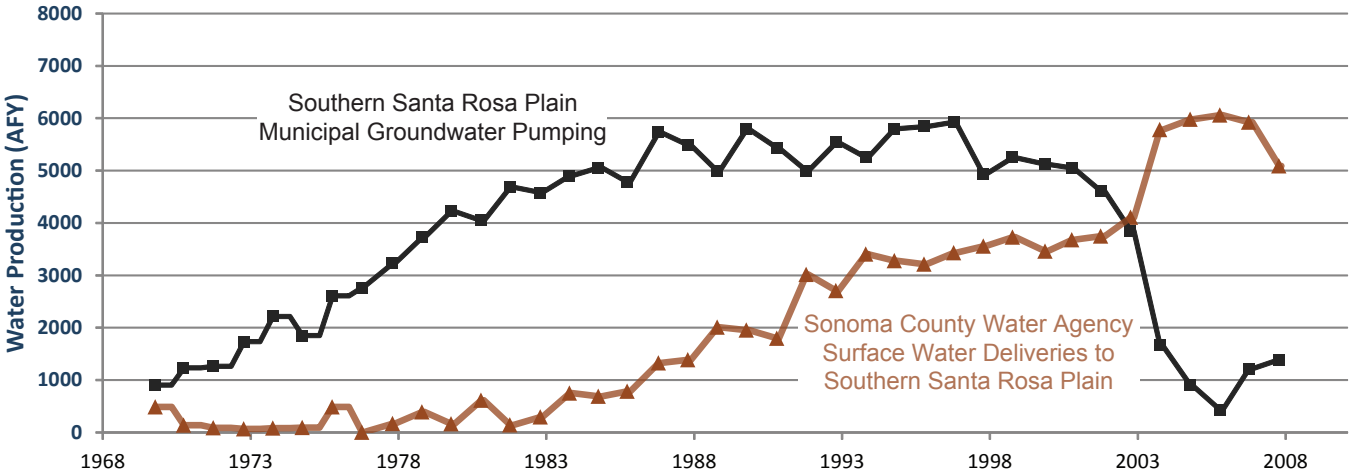
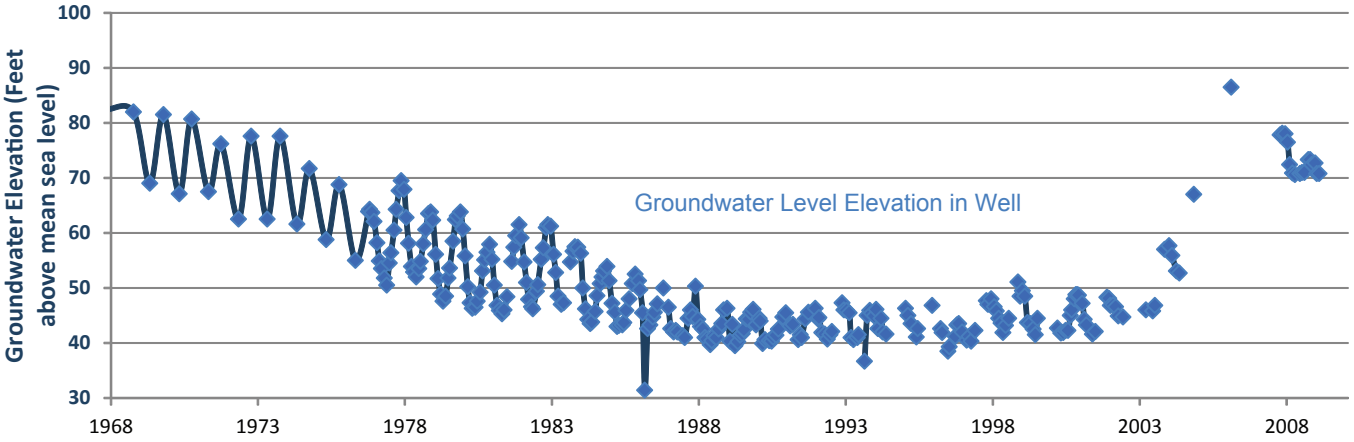


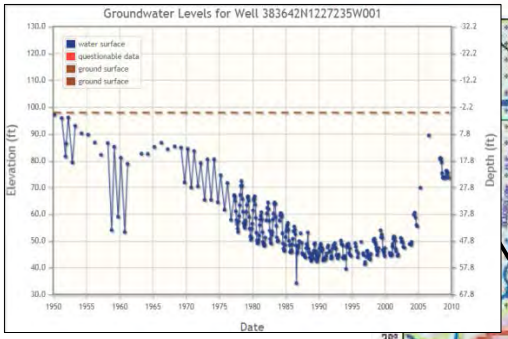
Figure 2-11



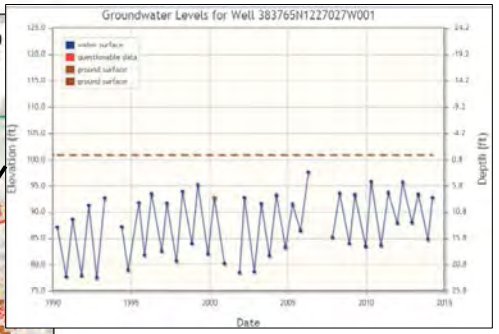


Total Annual Pumping, Southern SRP, Surface Water Deliveries, and Groundwater Levels, 1968-2008	Figure 2-12

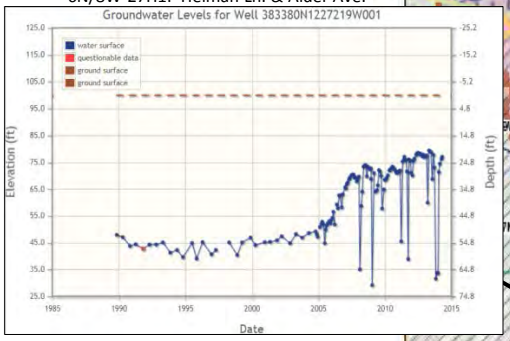
6N/8W-15J3: Wilfred Ave. & Langner Ave.



6N/8W-12M1: Horn Lane

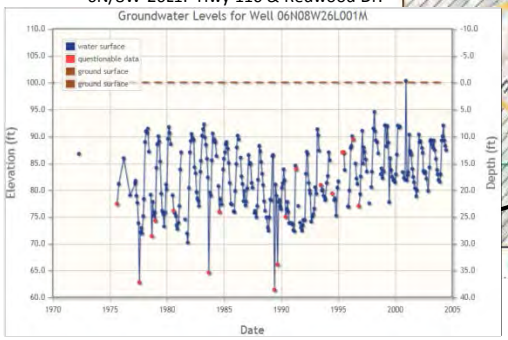


6N/8W-27H1: Helman Ln. & Alder Ave.

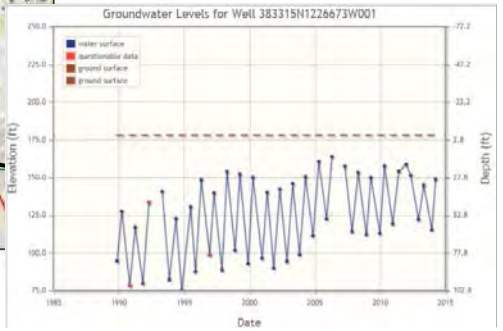


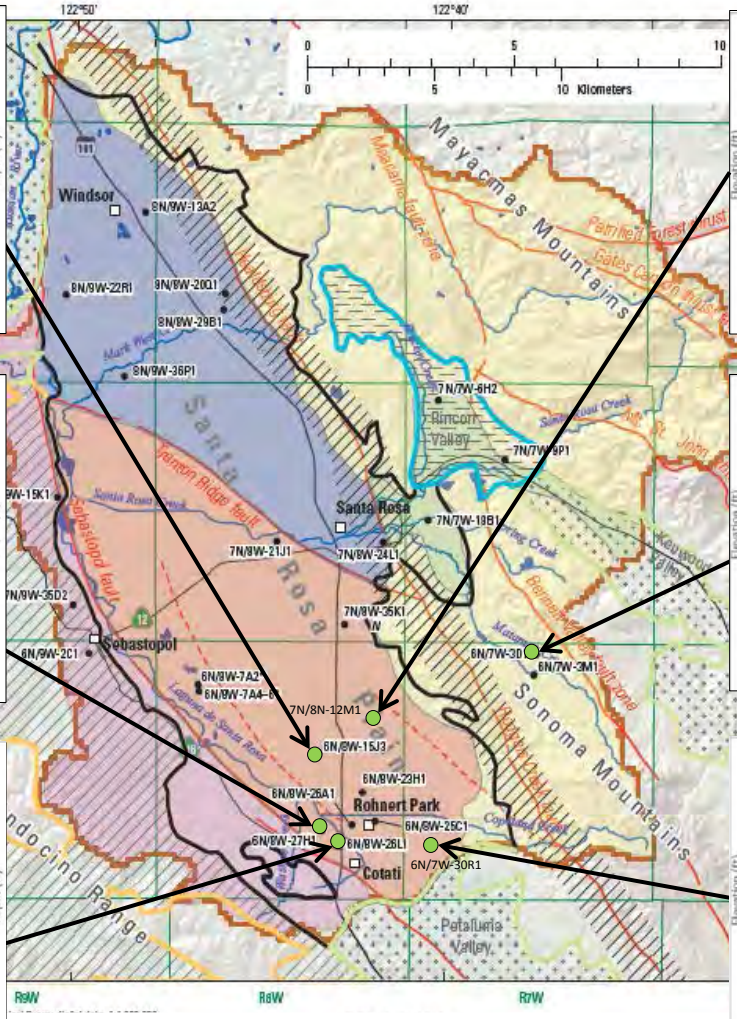
6N/7W-3D1: Bennett Valley Rd. & Sonoma Mtn. Rd.

6N/8W-26L1: Hwy 116 & Redwood Dr.



6N/7W-30R1: Petaluma Hill Rd. & Weiss Ln.

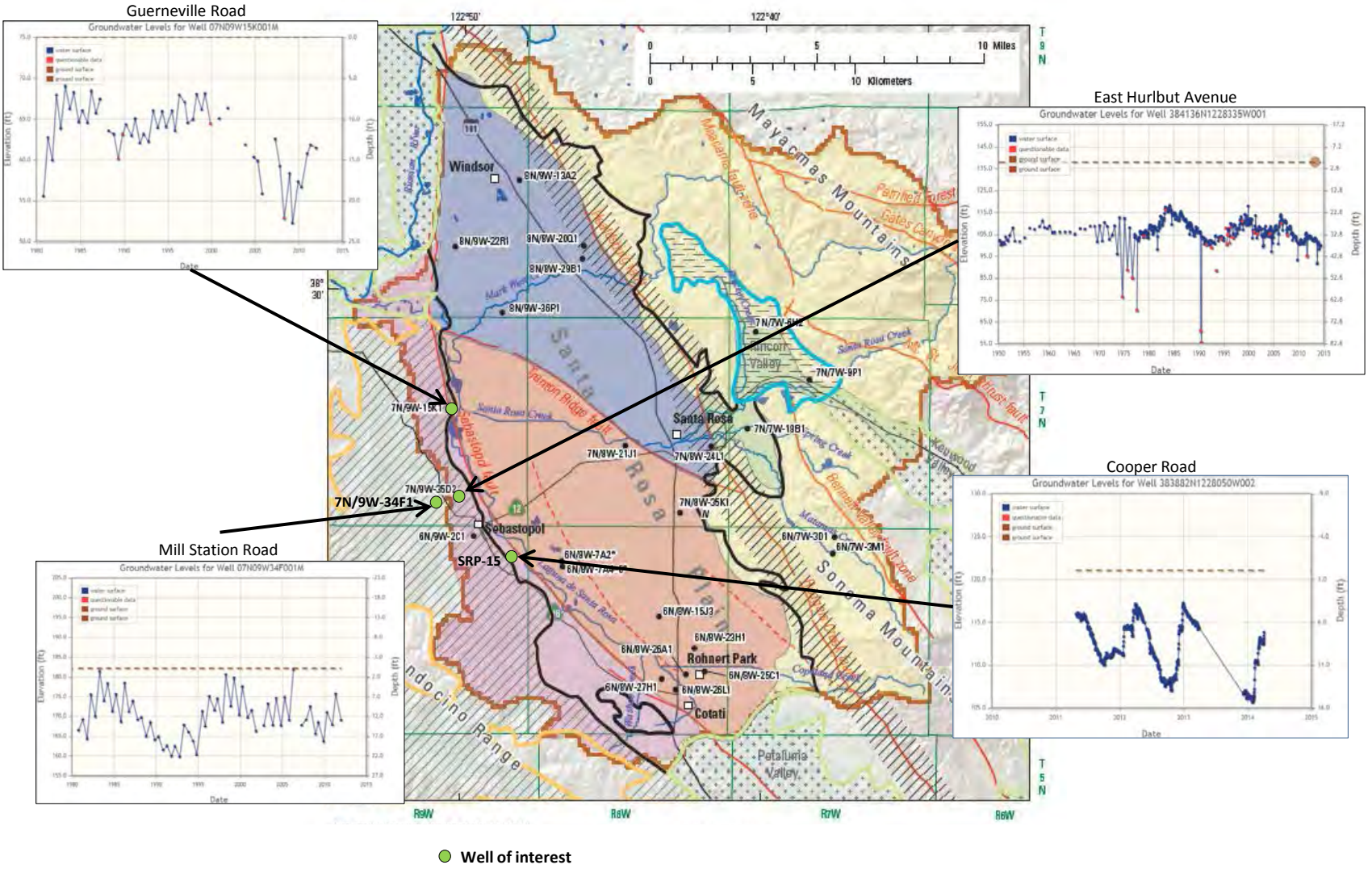




● Well of interest

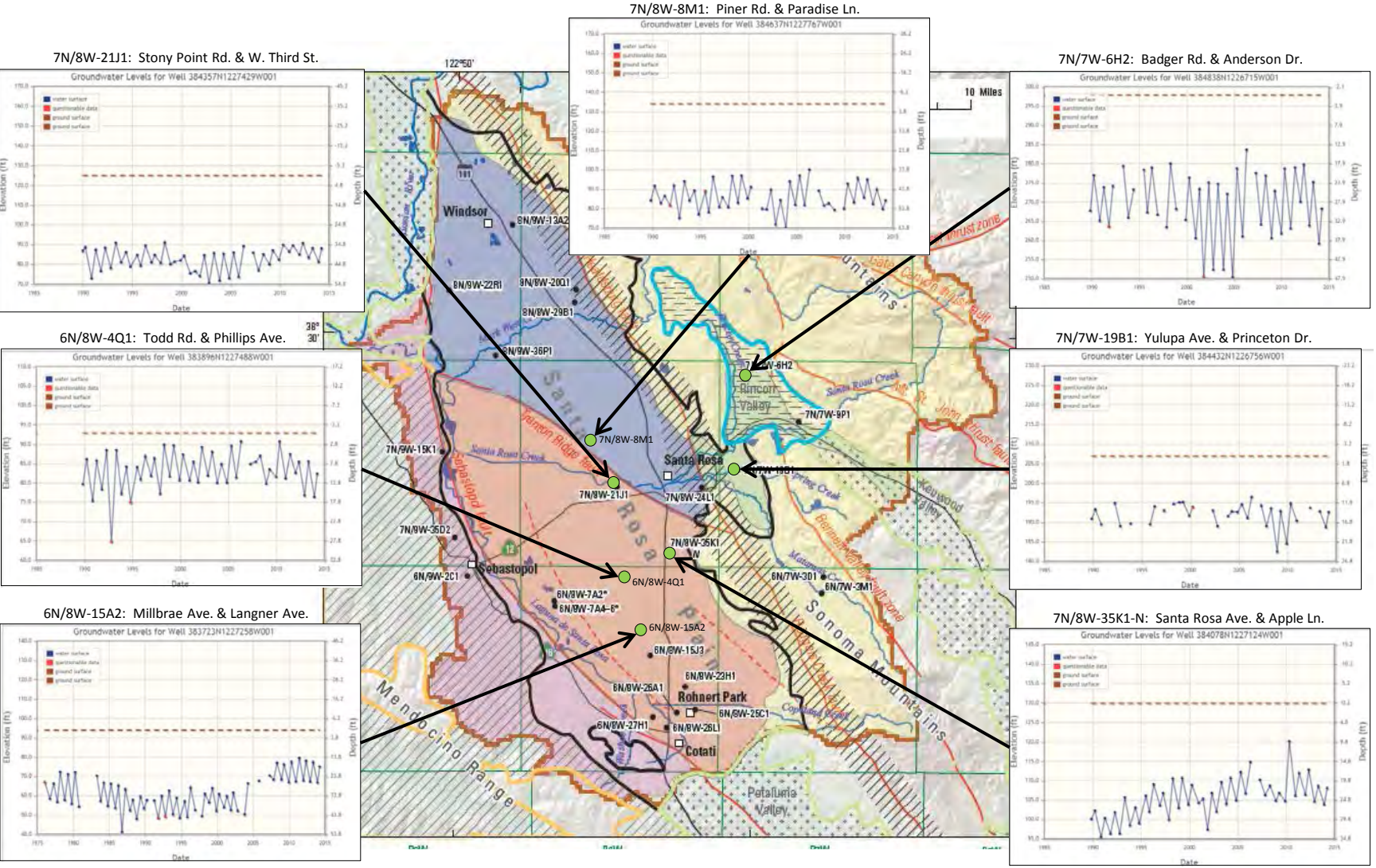
Well Hydrographs for Cotati

Figure 2-13A



Well Hydrographs for Sebastopol

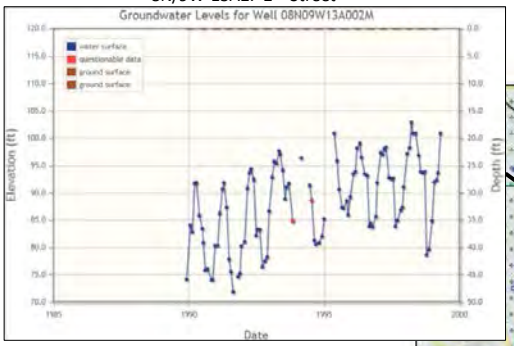
Figure 2-13B



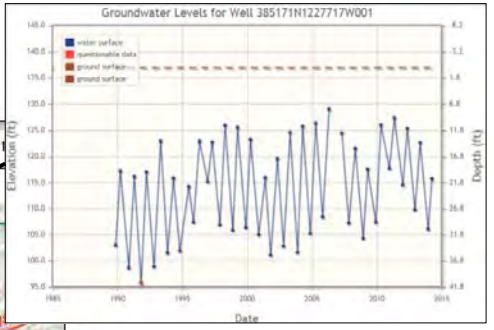
Well Hydrographs for Santa Rosa, Bennett Valley, and Rincon Valley

Figure 2-13C

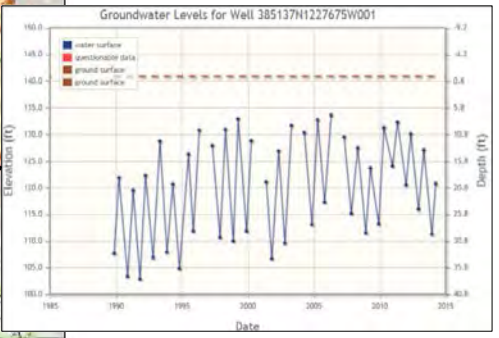
8N/9W-13A2: 2nd Street



8N/8W-29C3: Donna Dr. & Old Redwood Hwy

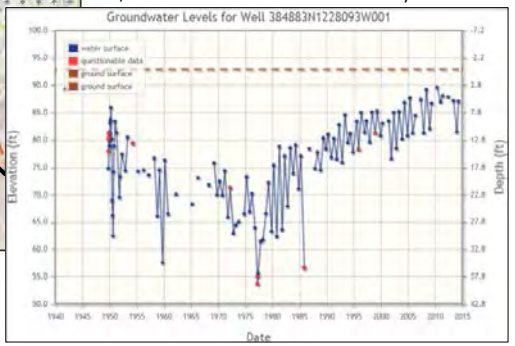


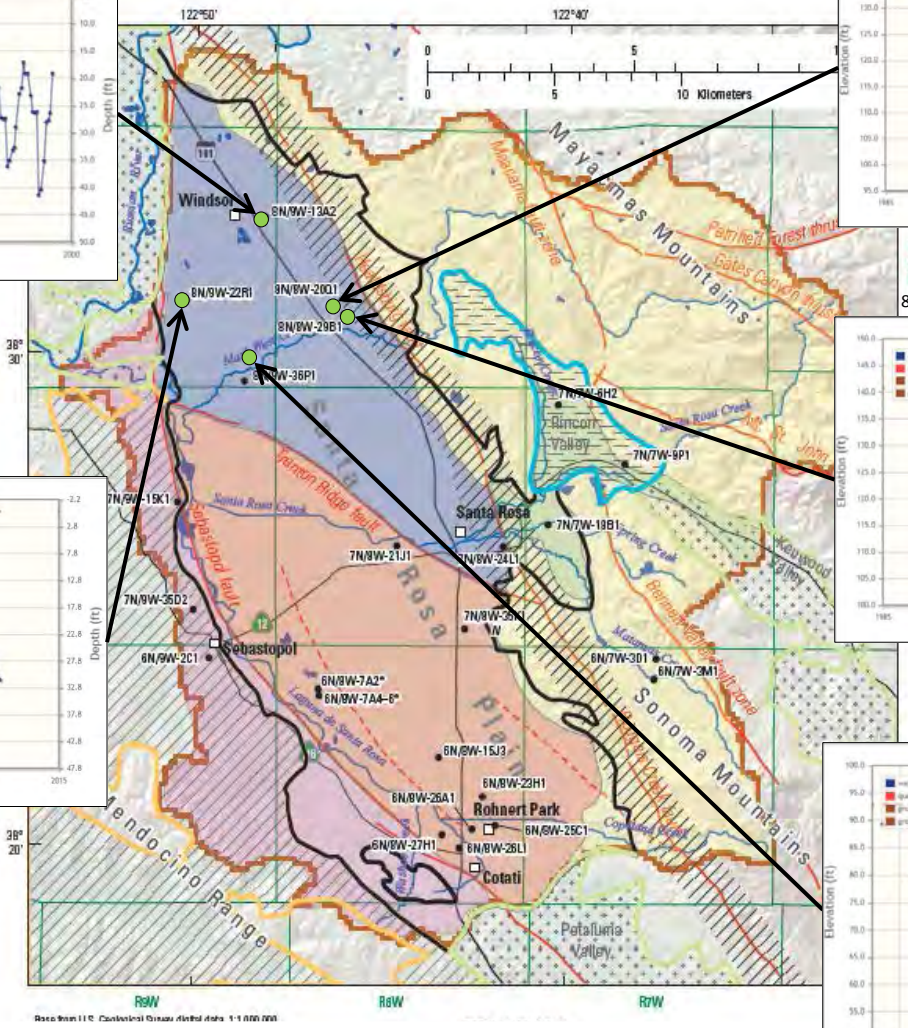
8N/8W-29B1: Kittery Pt. & Old Redwood Hwy



8N/9W-22R1: Starr & Pratt Rd.

7N/9W-01C1: River Rd. & Martinelli Vinyards

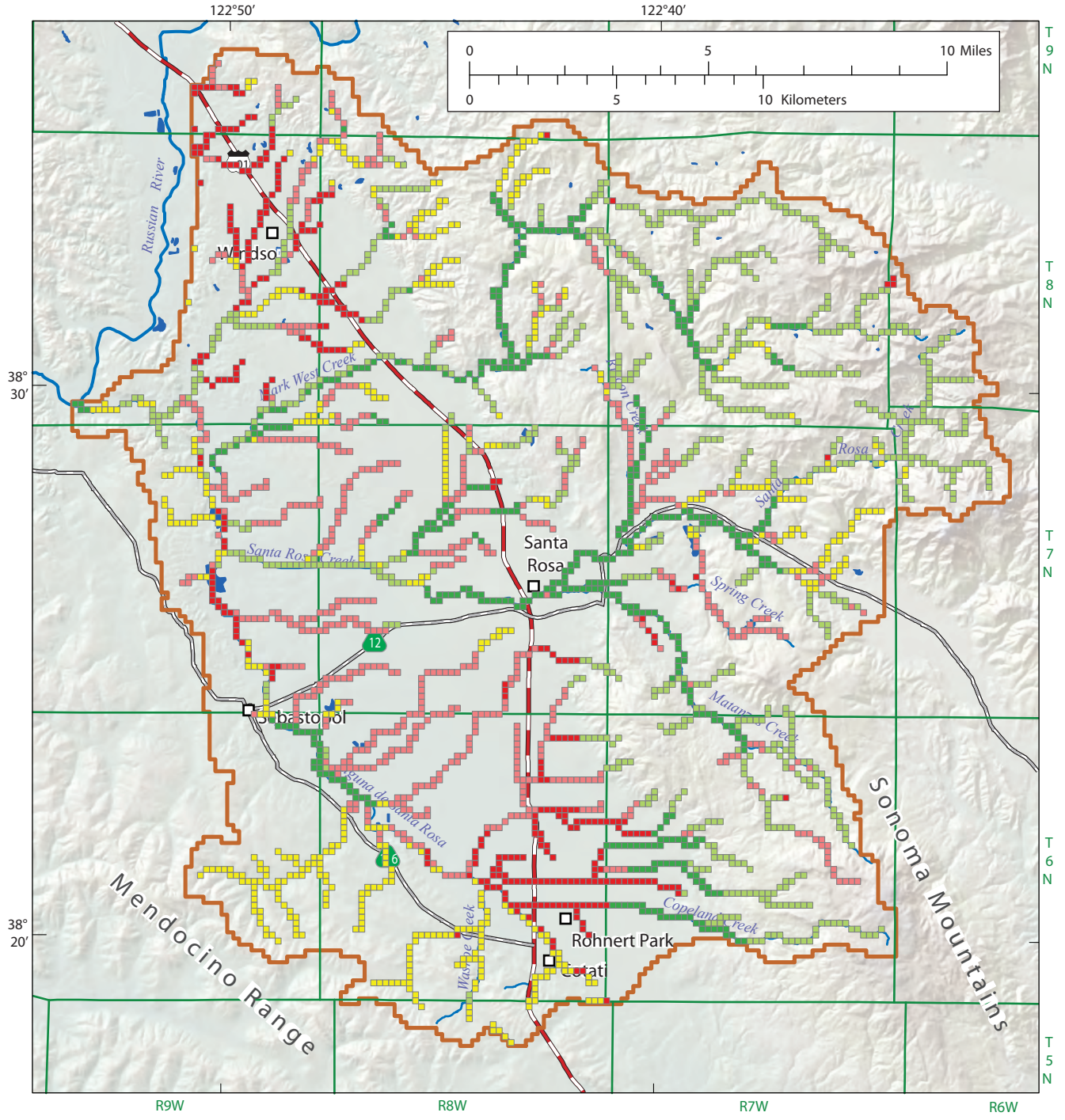




● **Well of interest**

Well Hydrographs for Windsor

Figure 2-13D



EXPLANATION

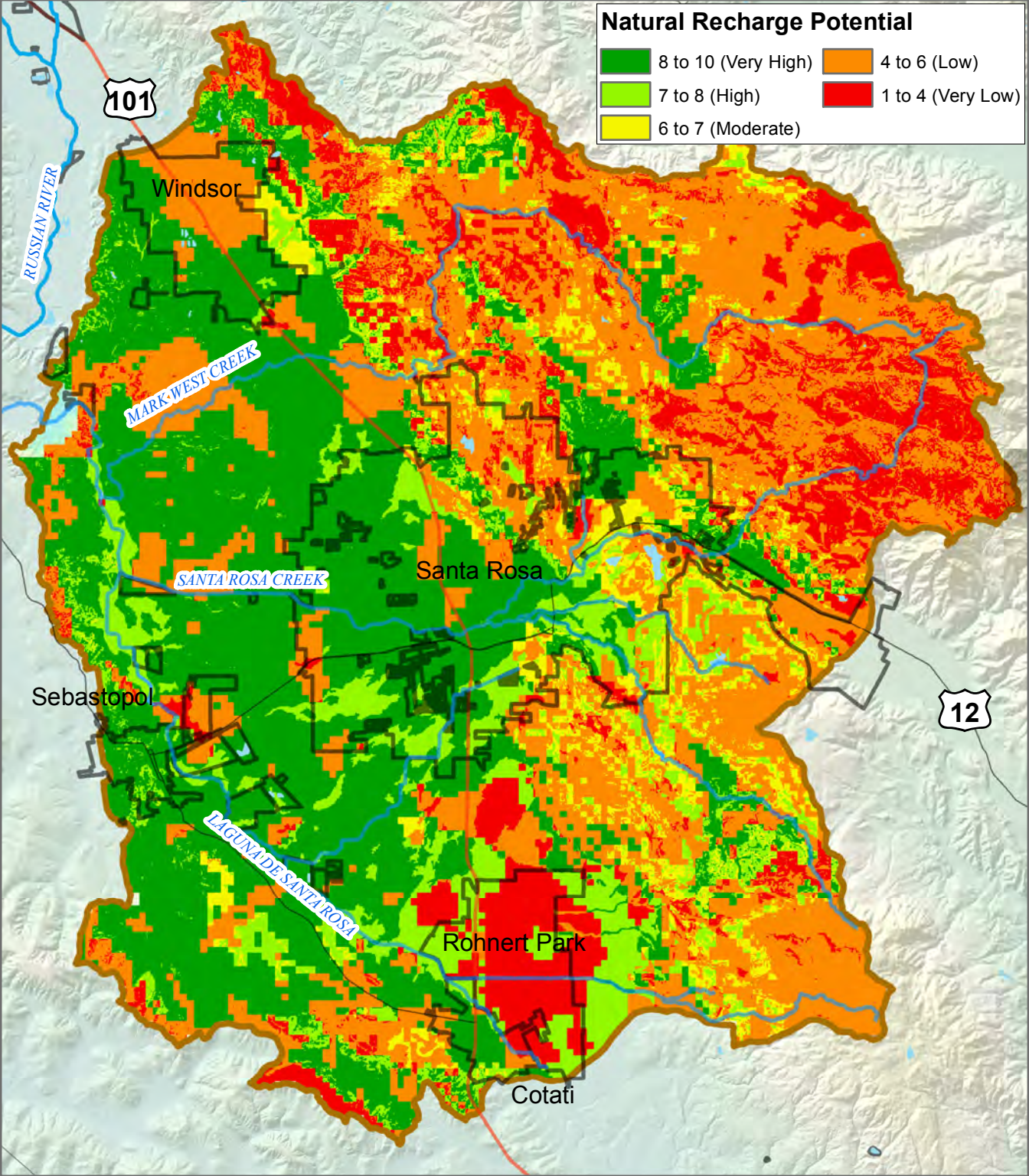
Streambed conductivity, in feet per day

- 0.007086 to 0.1
- >0.1 to 0.5
- >0.5 to 1
- >1 to 3
- >3 to 6.52

Santa Rosa Plain watershed and hydrologic-model boundary

Streambed Conductivity (feet per day)

Figure 2-14

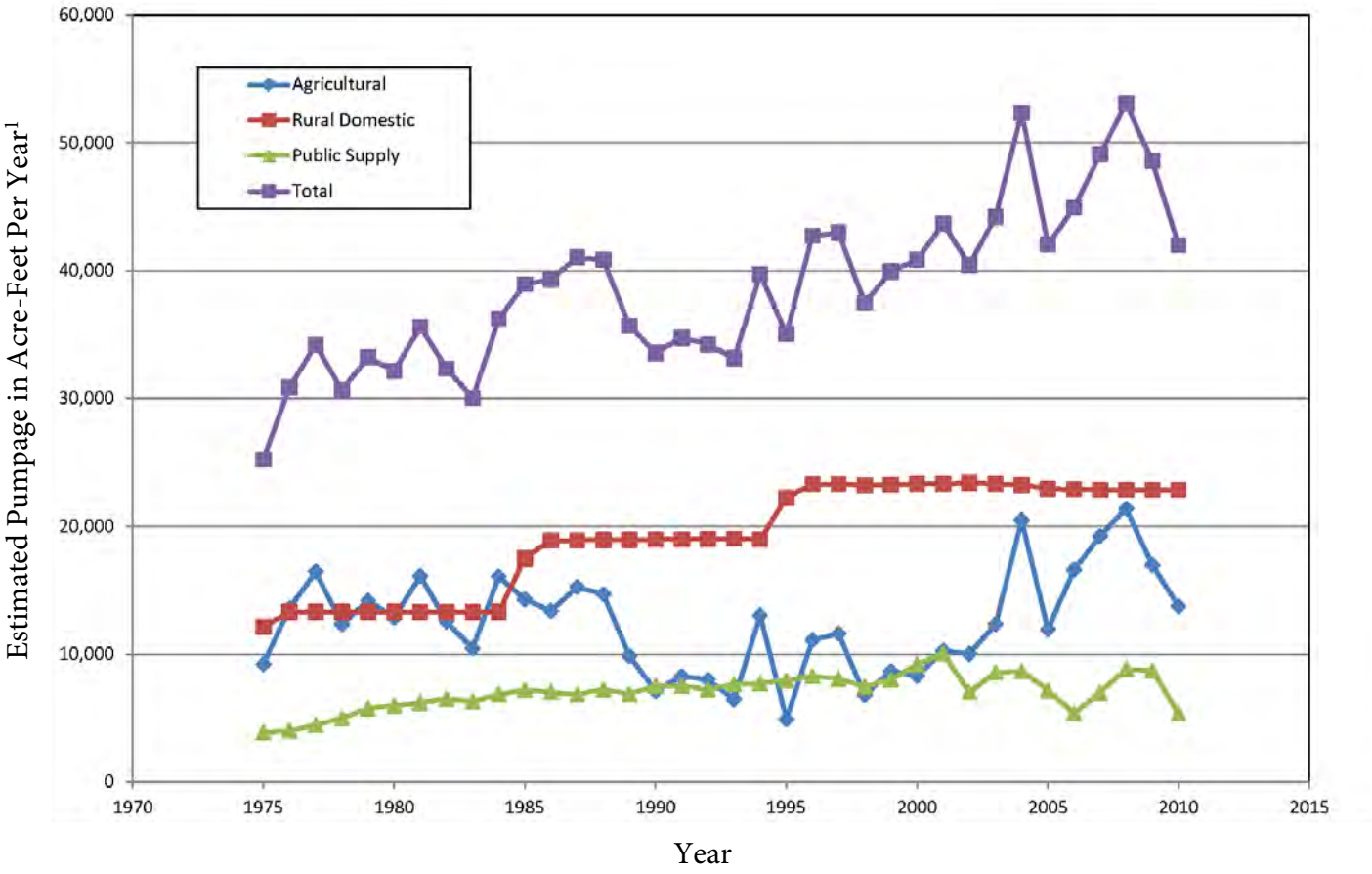


Natural Relative Recharge Potential Map, Plan Area

0 1.25 2.5 5 Miles

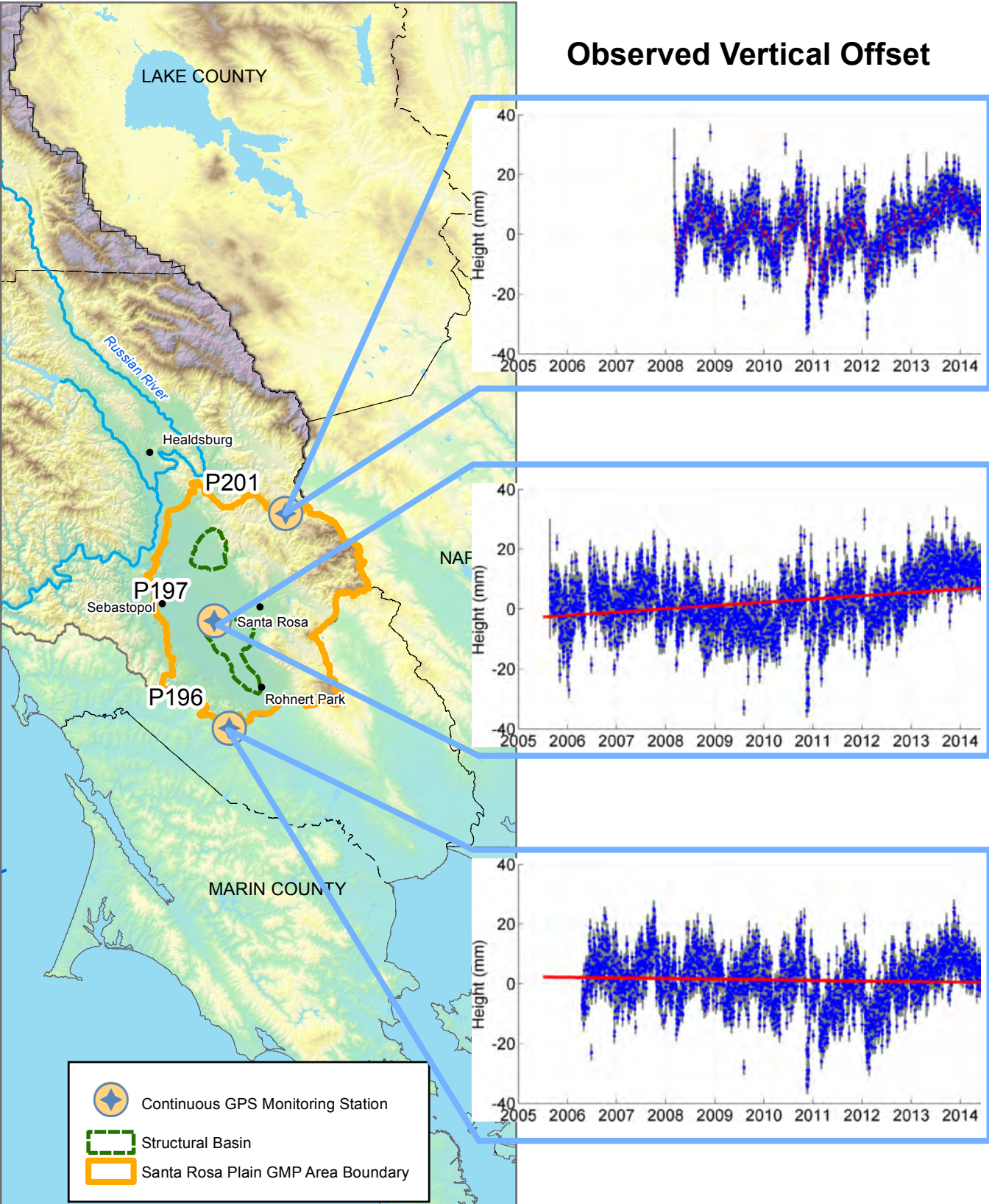
N W E S

Figure 2-15



[1]Estimated pumpage based on simulations from final calibrated GSFLOW Model for Santa Rosa Plain Watershed (USGS, 2014).

Total Estimated Average Annual Pumping in the Plan Area	Figure 2-16

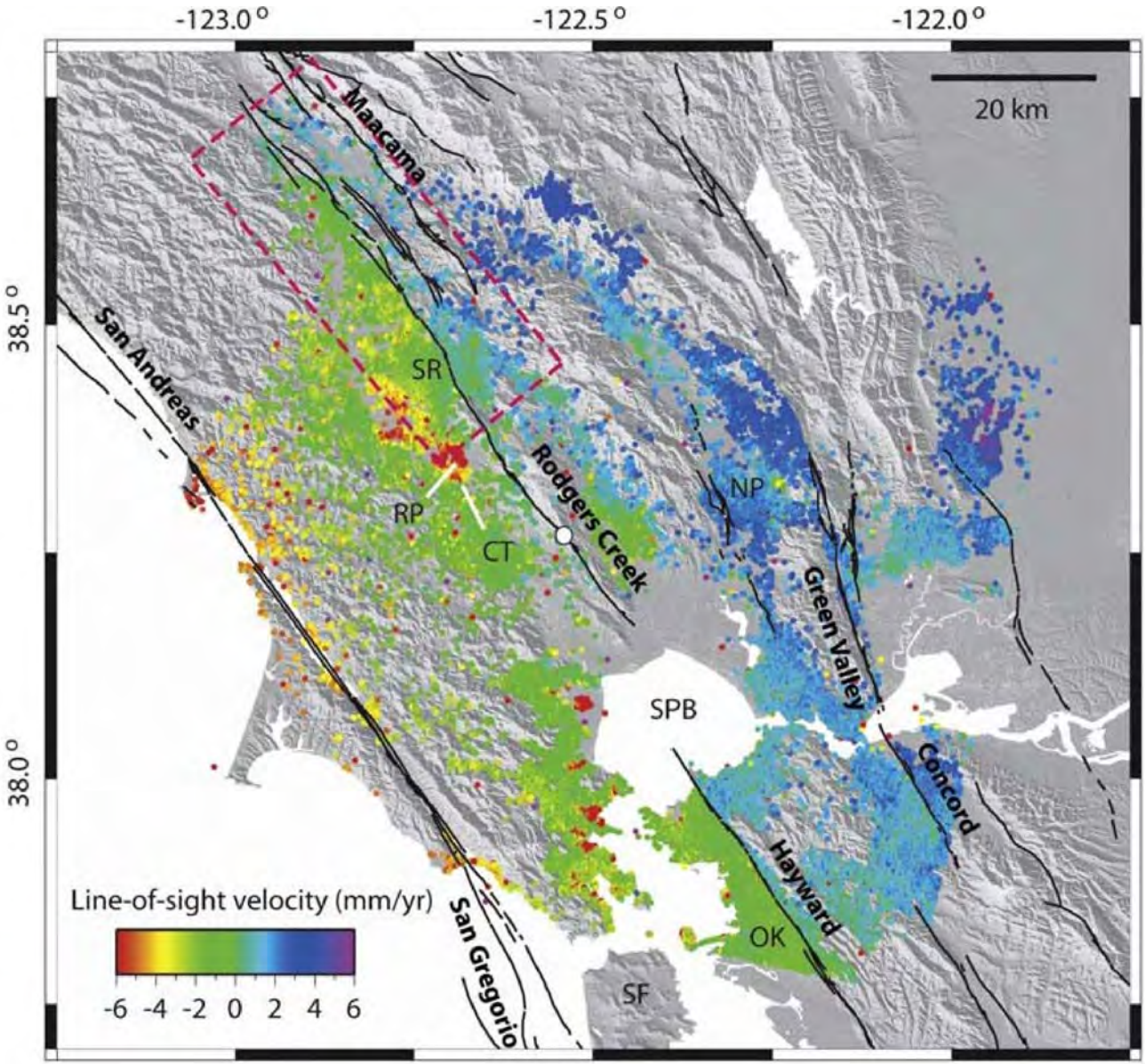


Santa Rosa Plain Watershed Ground Surface Monitoring Stations

0 3.75 7.5 15 Miles

N W E S

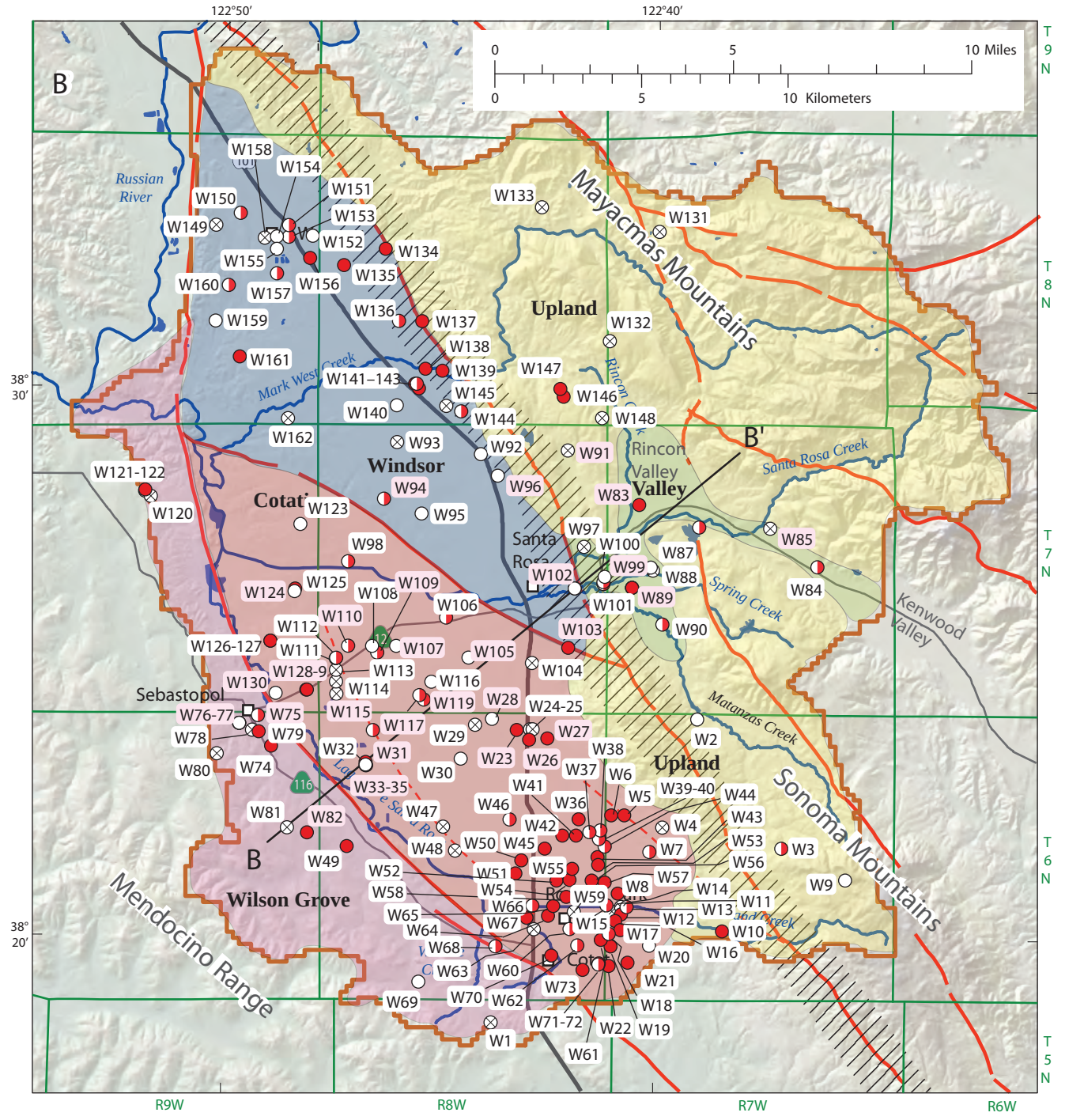
Figure 2-17



InSAR output for Santa Rosa Plain, 1992-2001

Colors indicate velocity of ground surface calculated from satellite-based Radar observations. Black lines are faults; SR is Santa Rosa, RP is Cotati, and CT is Cotati. Image from Funning et al, 2007; faults from USGS and California Geological Society.

Figure 2-18



Shaded relief derived from U.S. Geological Survey National Elevation Dataset, 2006, Albers Equal Area Conic Projection

EXPLANATION

Groundwater storage units
- Cotati Basin
- Windsor Basin
- Valley
- Wilson Grove
- Upland

Rodgers Creek fault zone

Inferred fault

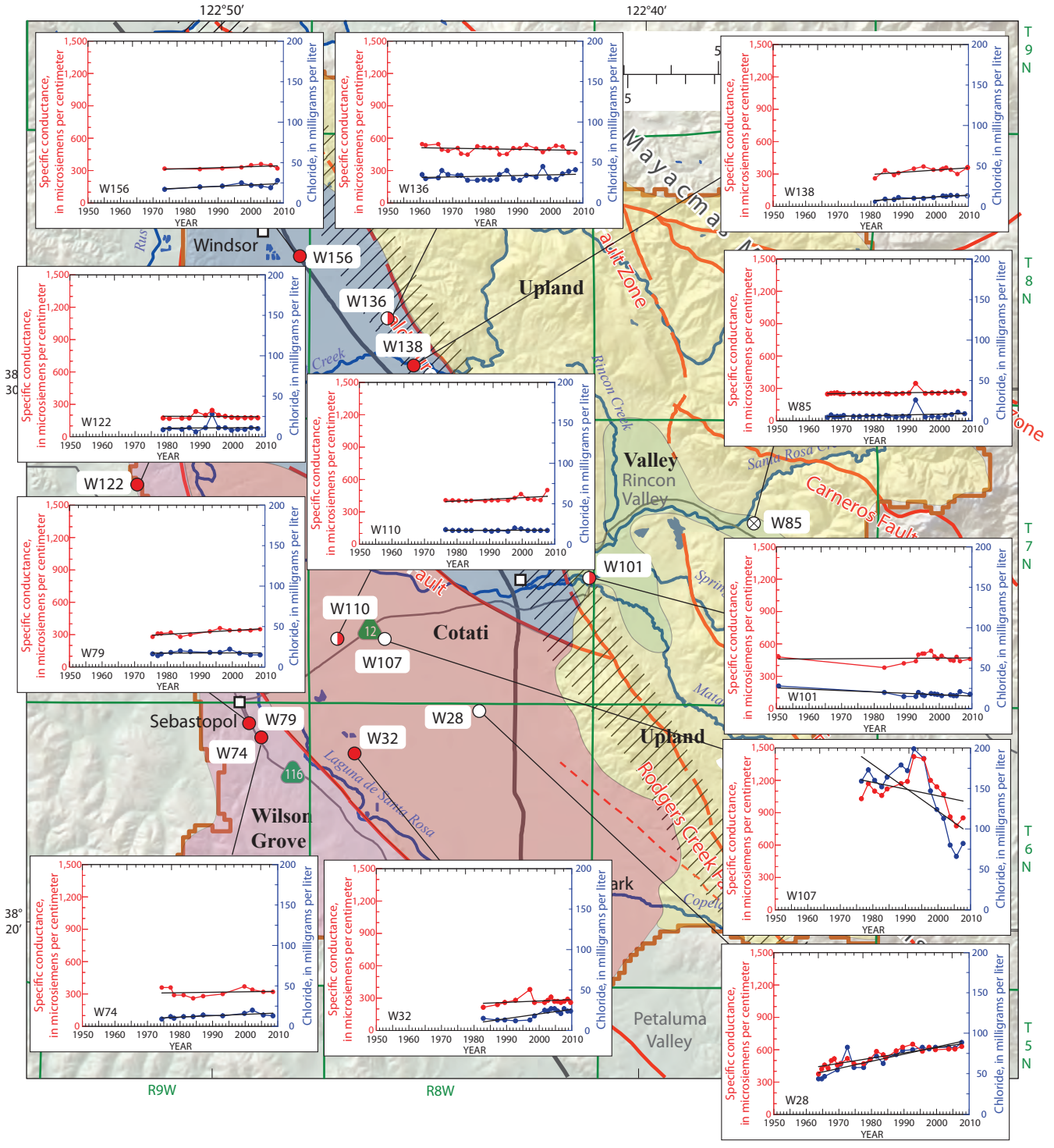
B — B′ Line of section

Well perforated interval
- Shallow (0′ to 150′ below land surface datum)
- Mixed
- Deep (greater than 150)
- Construction unknown

W82 Well used for section B-B′

Location of Water Quality Sampling Wells

Figure 2-19



Base from U.S. Geological Survey digital data, 1:1,000,000, downloaded 2003 State Plane Projection, Fipzone 402
Shaded relief base from 1:250,000 scale Digital Elevation Model: sun illumination from northwest at 30 degrees above horizon

EXPLANATION

Groundwater storage units
- Cotati Basin
- Windsor Basin
- Valley
- Wilson Grove
- Upland

Rodgers Creek Fault Zone

Inferred fault

Well perforated interval
- Shallow (0′ to 150′ below land surface datum)
- Mixed
- Deep (Greater than 150′)
- Construction unknown

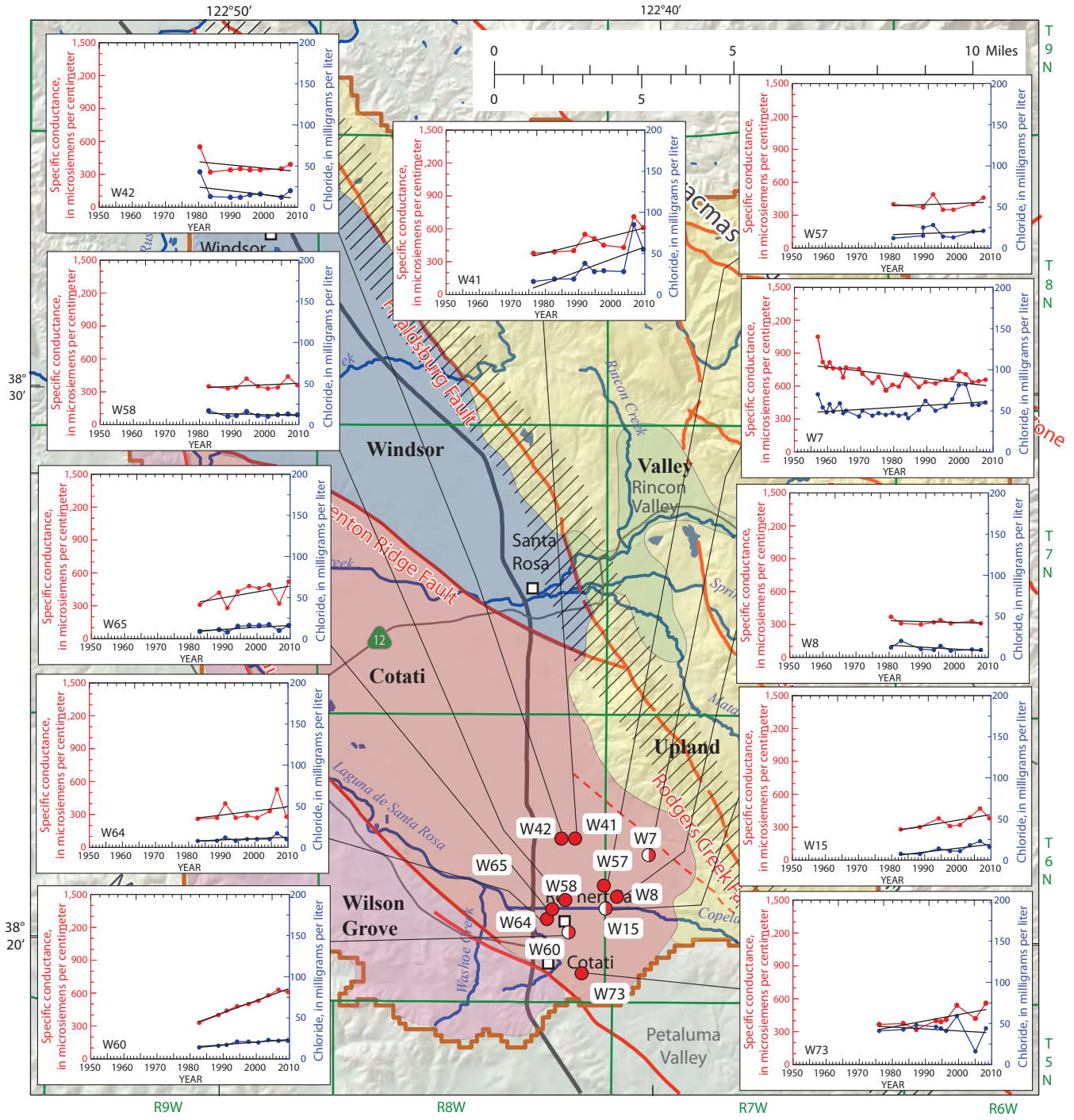
Specific conductance in microsiemens per centimeter

Chloride in milligrams per liter

Trend line

Specific Conductance and Chloride Trend Lines

Figure 2-20A



Base from U.S. Geological Survey digital data, 1:1,000,000, downloaded 2003 State Plane Projection, Fipzone 402
Shaded relief base from 1:250,000 scale Digital Elevation Model: sun illumination from northwest at 30 degrees above horizon

EXPLANATION

Groundwater storage units
- Cotati Basin
- Windsor Basin
- Valley
- Wilson Grove
- Upland

Rodgers Creek Fault Zone

Inferred fault

Well perforated interval
- Mixed
- Deep (greater than 150′ below land surface datum)

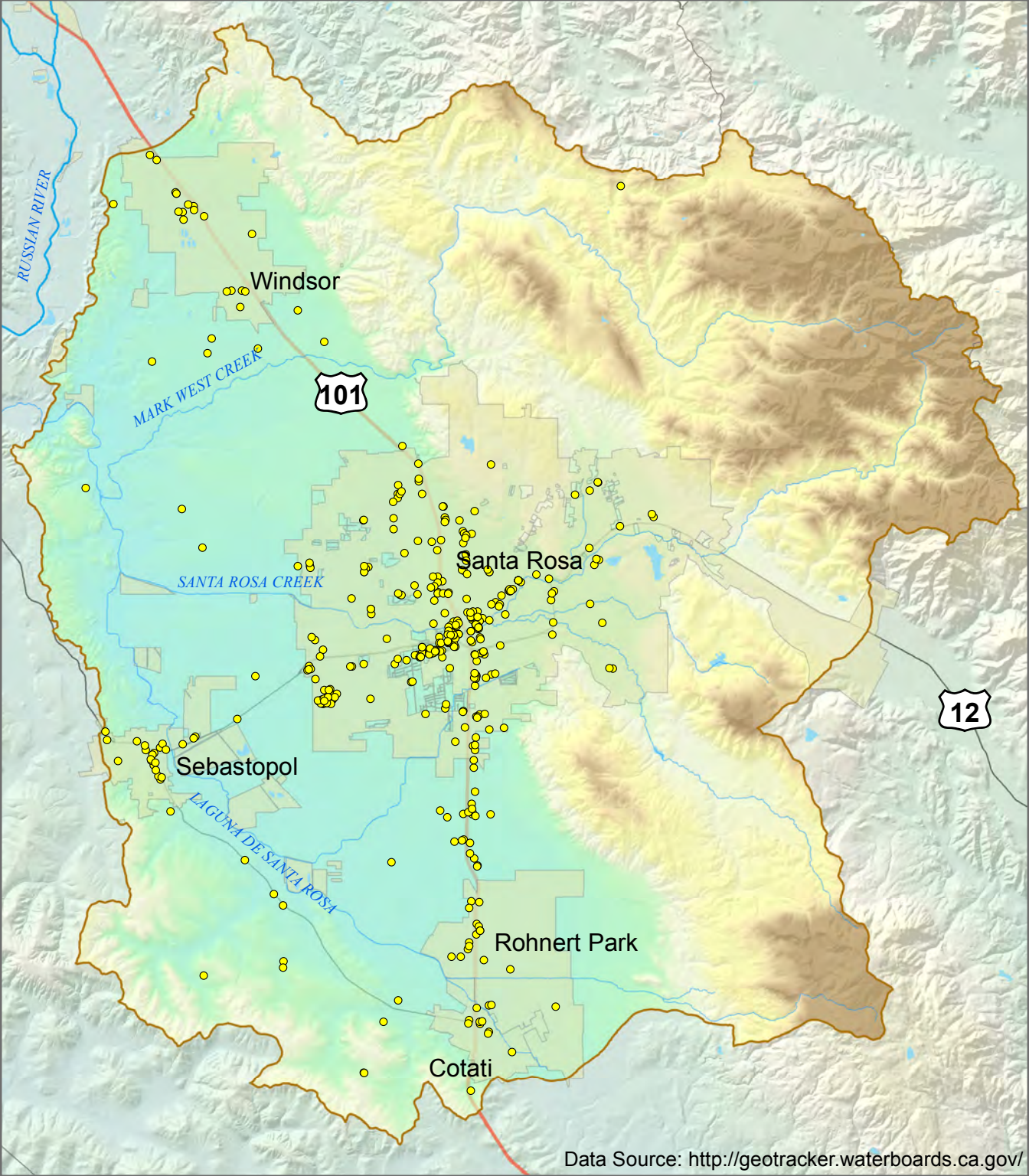
Specific conductance in microsiemens per centimeter

Chloride in milligrams per liter

Trend line

Specific Conductance and Chloride Trend Lines

Figure 2-20B

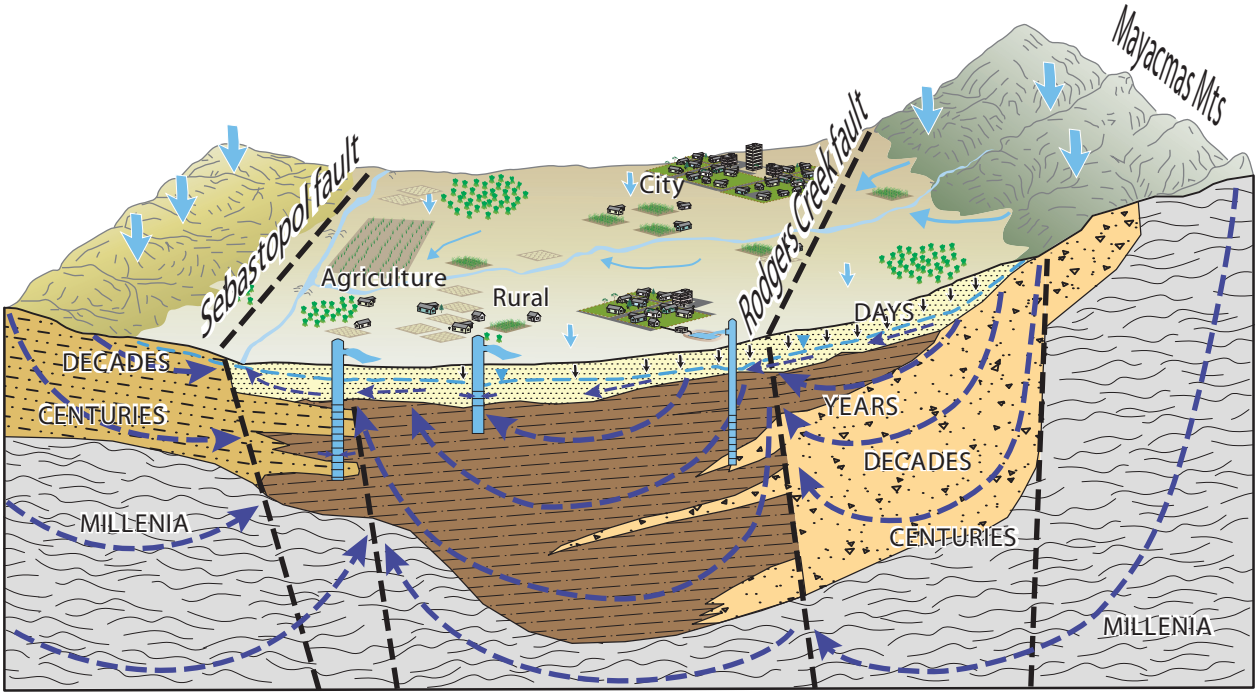


Contaminant Release Sites in the Plan Area

0 1.25 2.5 5 Miles

N W E S

Figure 2-21



FAULT ZONE

ALLUVIUM & GLEN ELLEN FORMATION

WILSON GROVE FORMATION

PETALUMA FORMATION

SONOMA VOLCANICS

BEDROCK

PRECIPITATION

RUNOFF

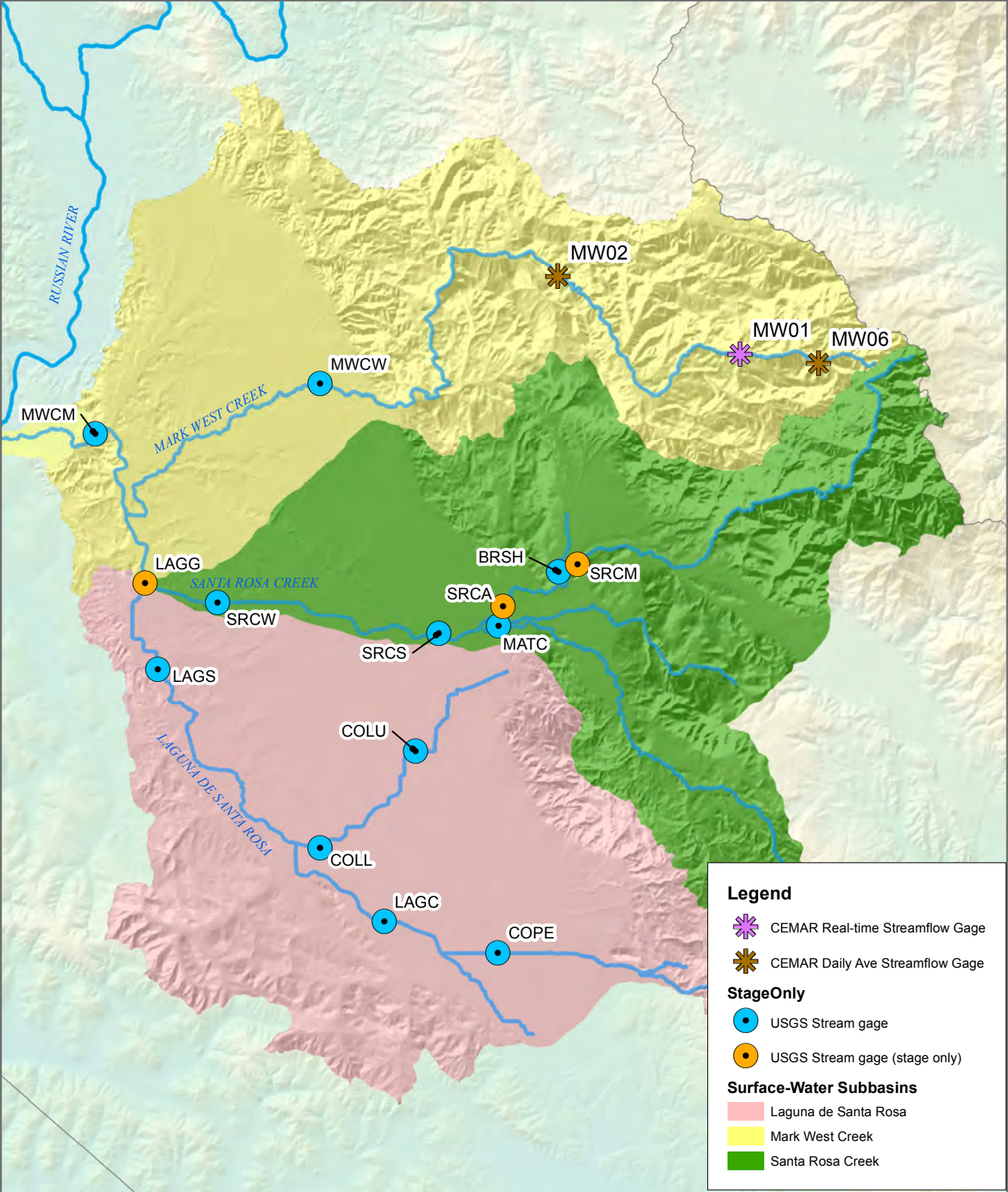
INFILTRATION

GENERAL DIRECTION OF GROUNDWATER MOVEMENT WITH RELATIVE AGE

WATER TABLE

Hydrogeologic Conceptual Model of the Plan Area

Figure 2-22

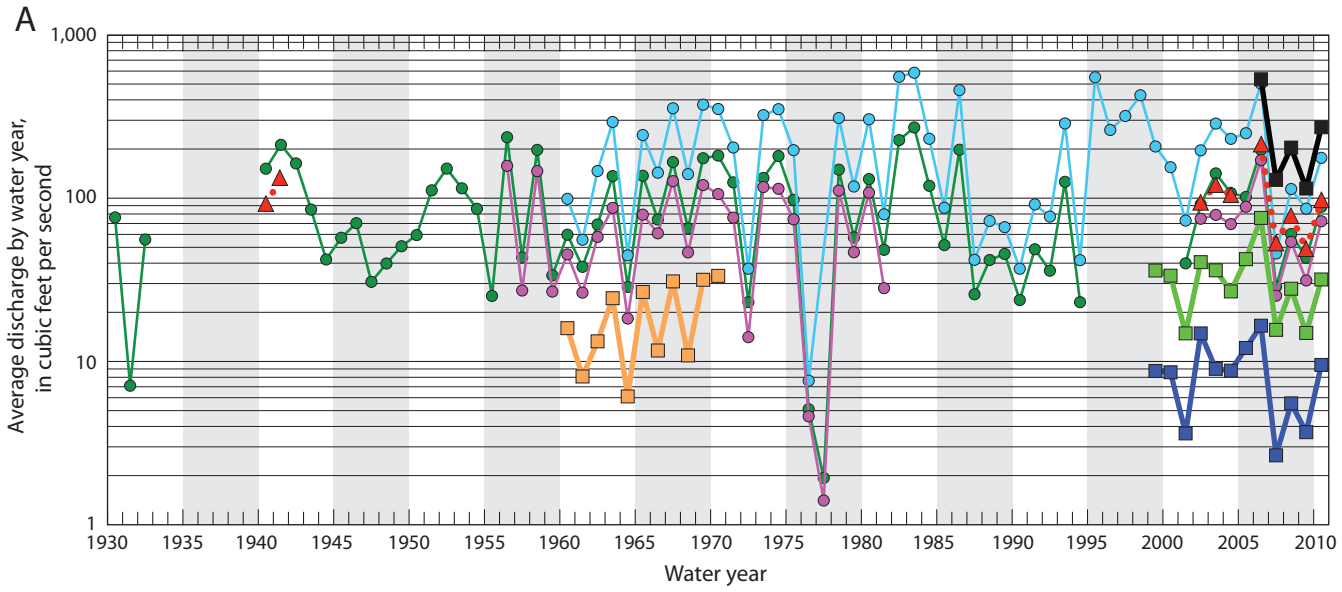


Subwatersheds, Major Streams, and Stream Gages in the Plan Area

0 1 2 4 Miles

N W E S

Figure 2-23

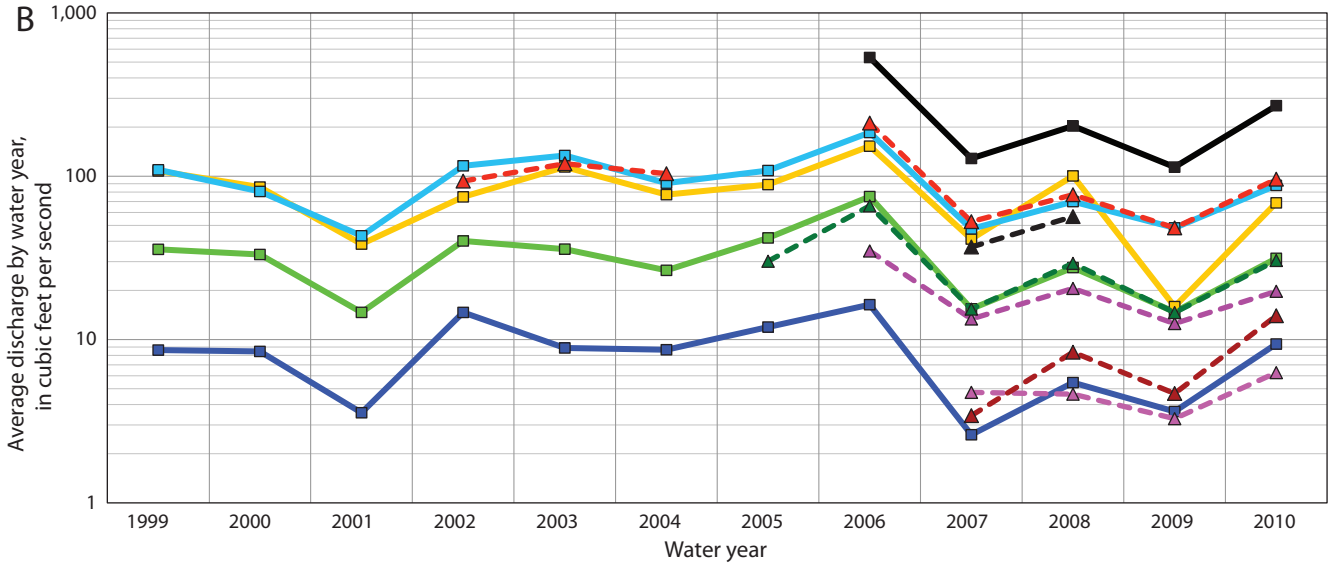


EXPLANATION

NAPH
NAPN
SCAC
LAGC
COLL
SRCU
MWCM
SRCS

See Figure 2-23 for location

Note: Thin lines with circles indicate gages outside of Santa Rosa Plain watershed (SRPW) with continuous records; Thick lines with squares indicate gages inside SRPW with continuous records; Dotted lines with triangles indicate gages inside SRPW with seasonal (Oct-Apr) records only



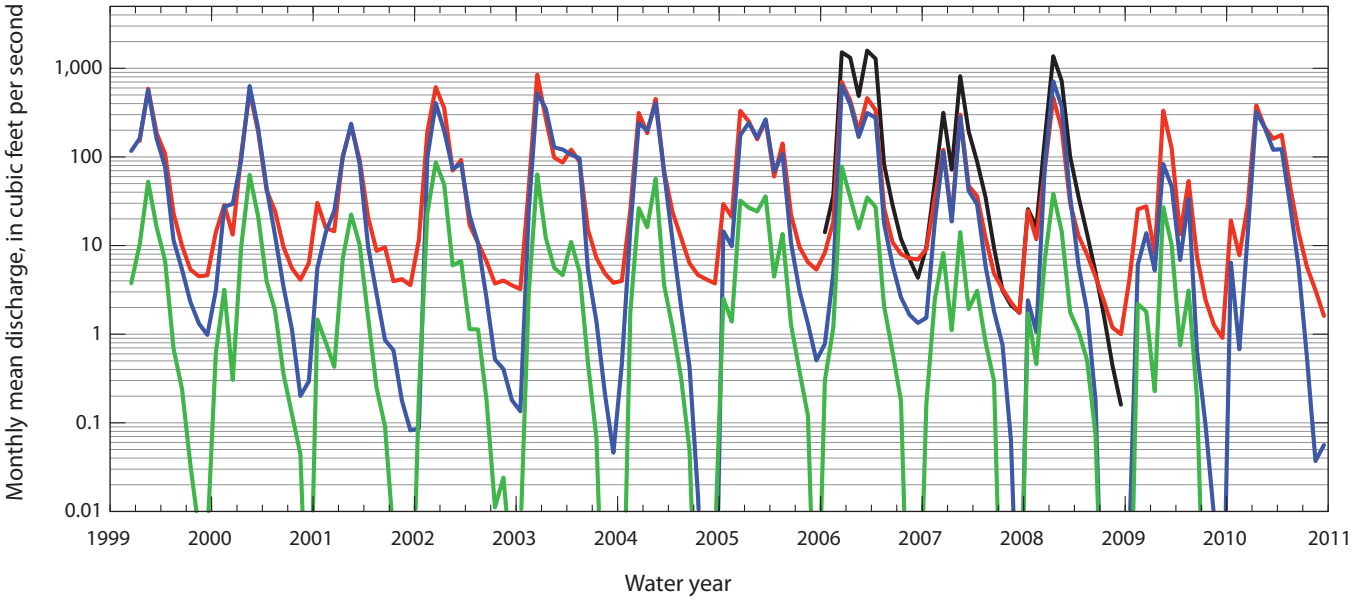
EXPLANATION

LAGC
MWCM
COLL
LAGS
SRCW
BRSH
MWCW
COPE
MATC
SRCS
COLU

Note: Thick lines with squares indicate gages inside SRPW with continuous records; Dashed lines with triangles indicate gages inside SRPW with seasonal (Oct-Apr) records only

Average Water Year Discharge for Gages Within and Adjacent to the Plan Area

Figure 2-24



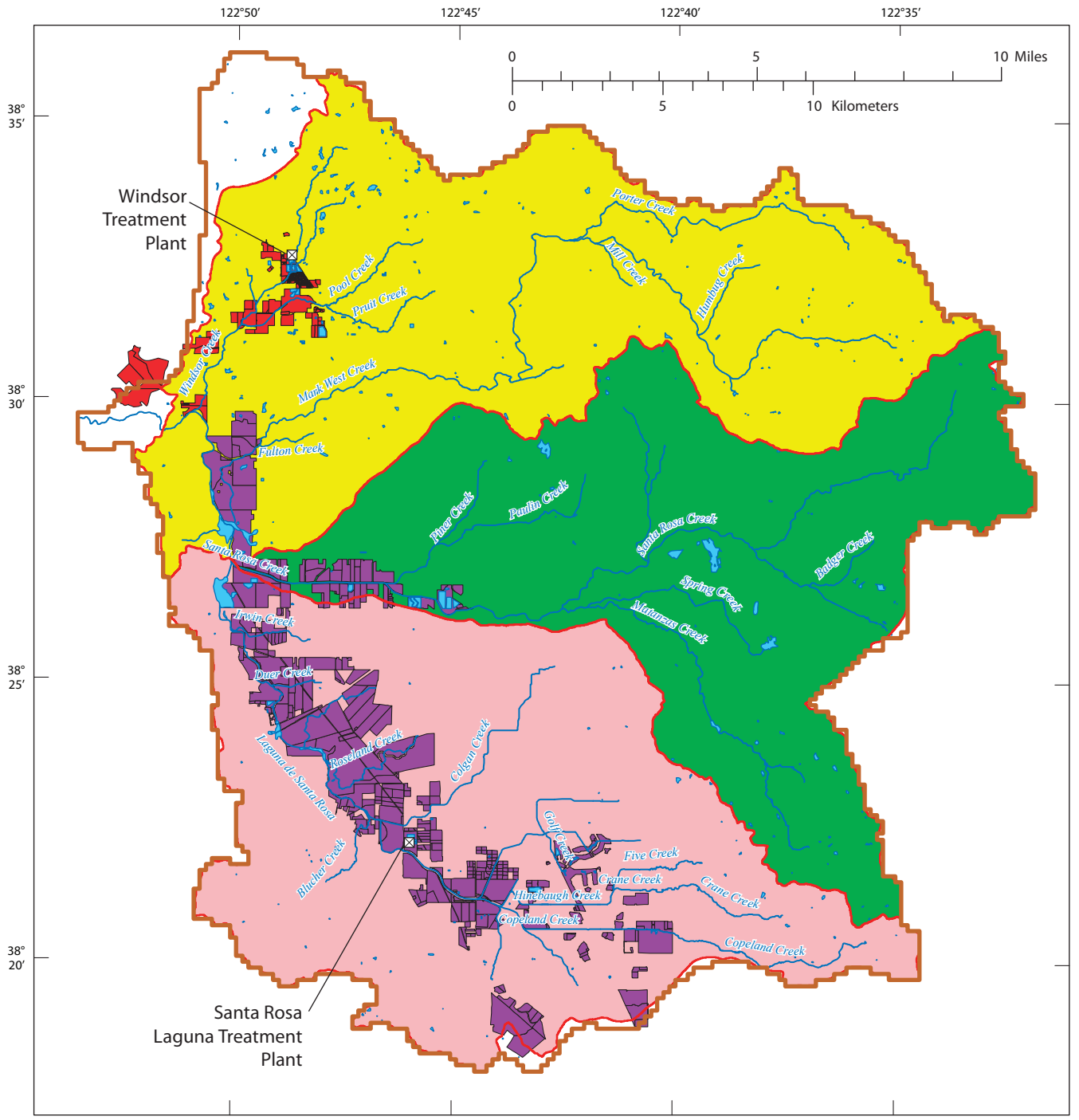
EXPLANATION

Santa Rosa Plain watershed gages; see figure 2-23 for location

MWCM SRCW

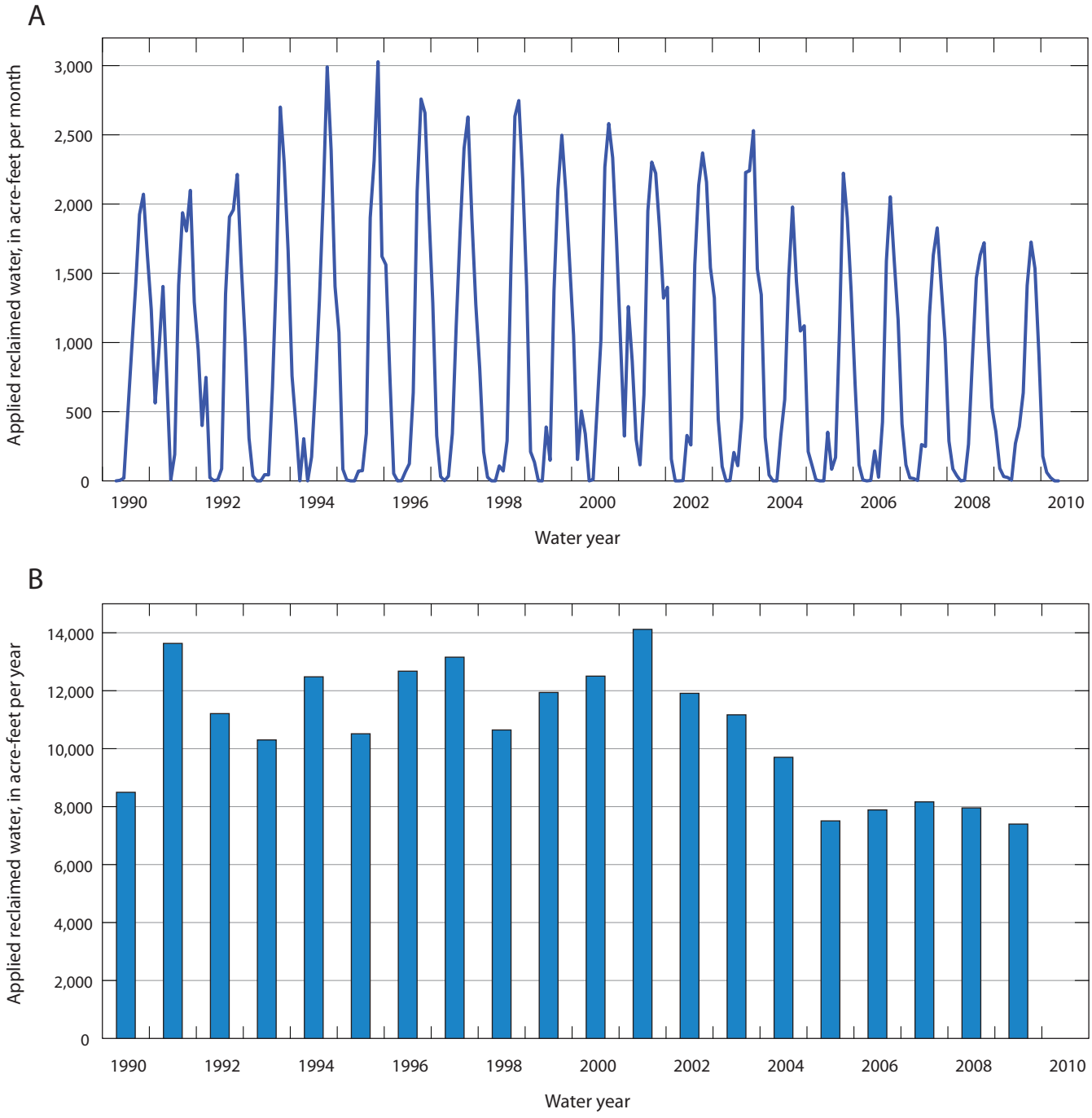
LAGS COLL

Monthly Mean Discharge for Four Selected Stream Gages in the Plan Area	Figure 2-25

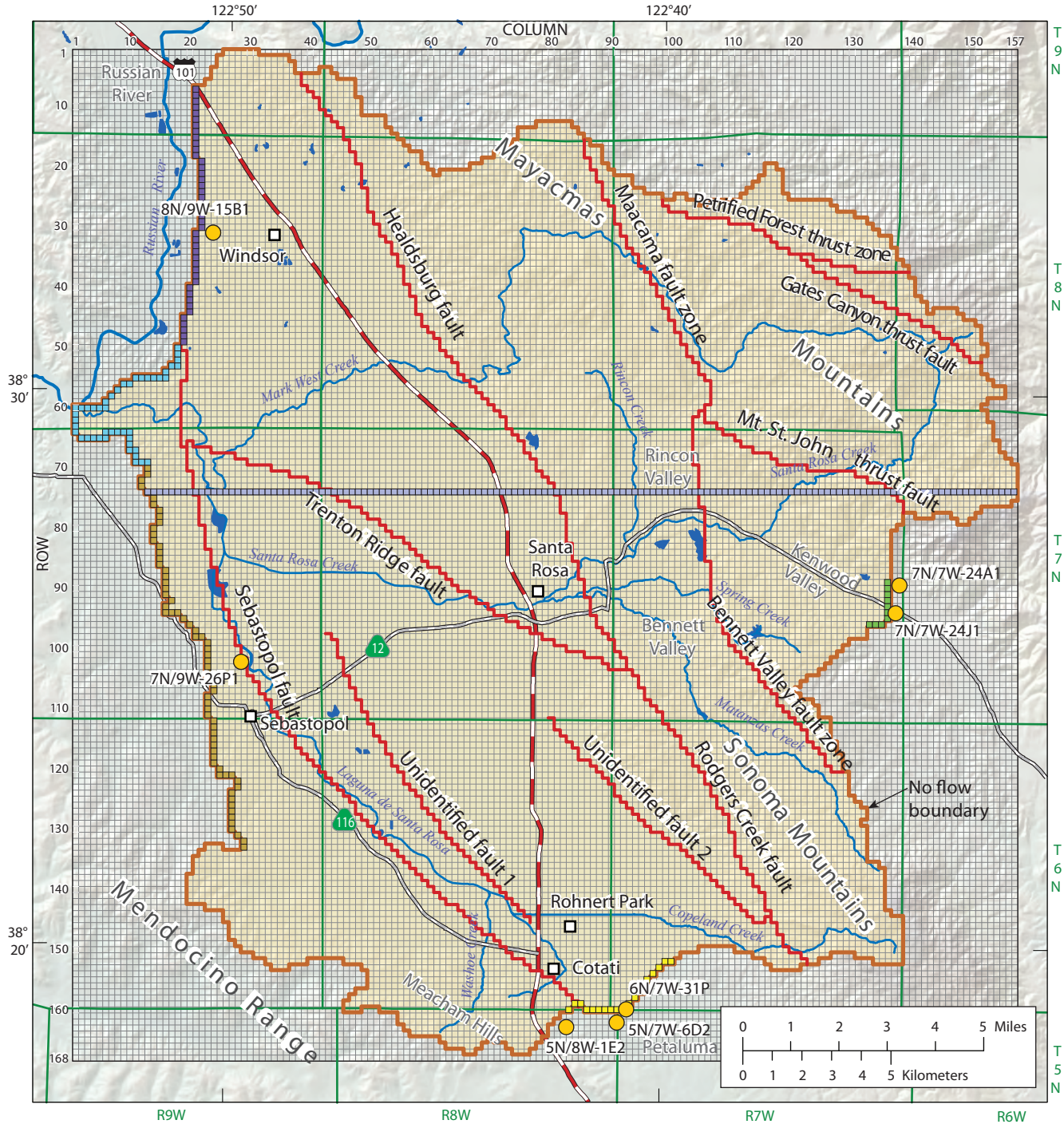


Location of Areas of Recycled Water Application for Irrigation

Figure 2-26



Volumes of Recycled Water Application for Irrigation by Year	Figure 2-27



EXPLANATION

Santa Rosa Plain hydrologic model cells
- Active model cell
- Inactive model cell
- Cells along layer profile shown in figure C-2

General-head boundary cells
- Russian River
- Russian River to Wilson Grove
- Wilson Grove
- Cotati
- Kenwood

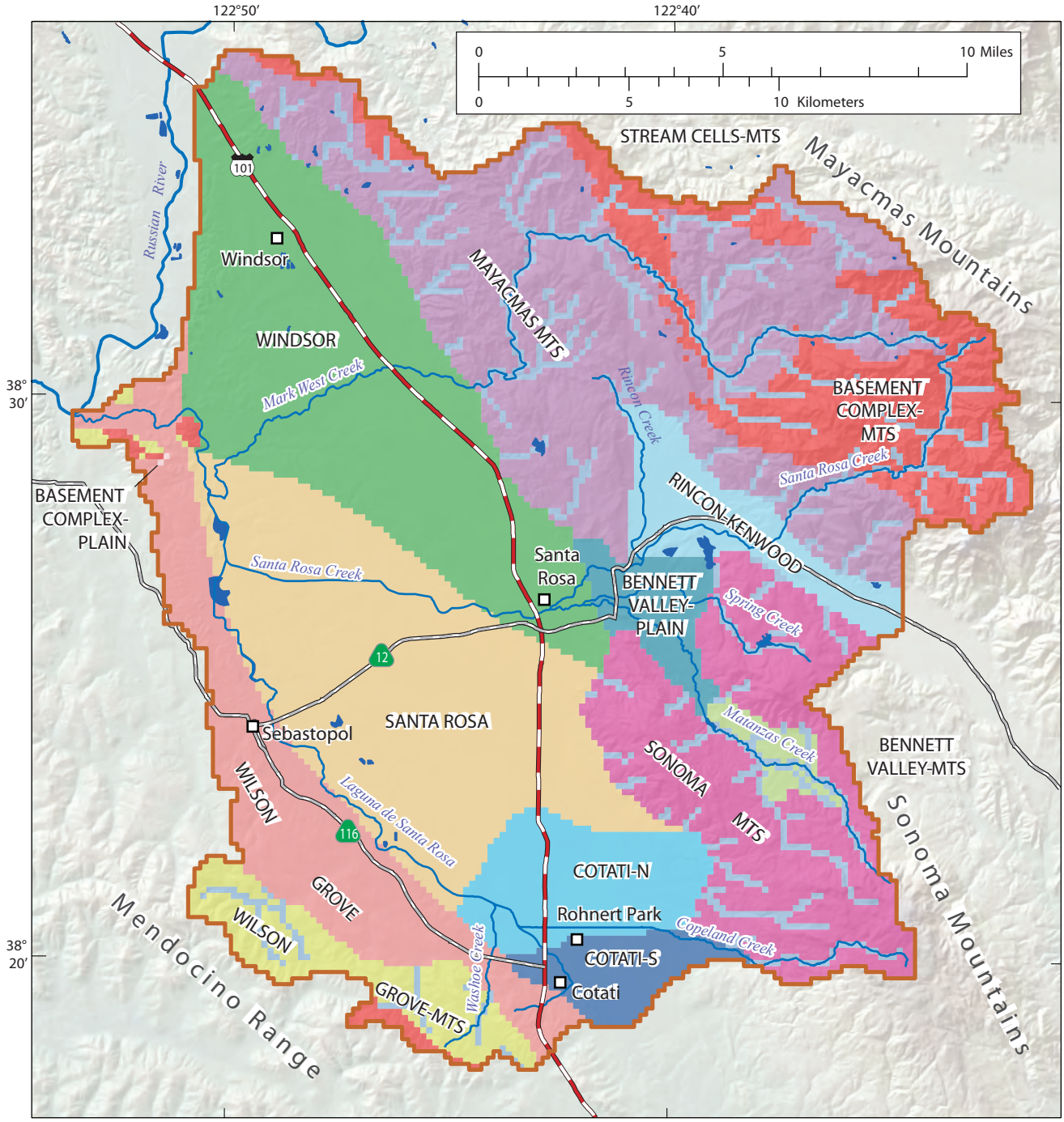
Simulated horizontal-flow barrier in model

Santa Rosa Plain watershed and hydrologic- model boundary

5N/8W-1E2
Well used to define general-head boundary water levels

GSFLOW Model Boundary

Figure 2-28



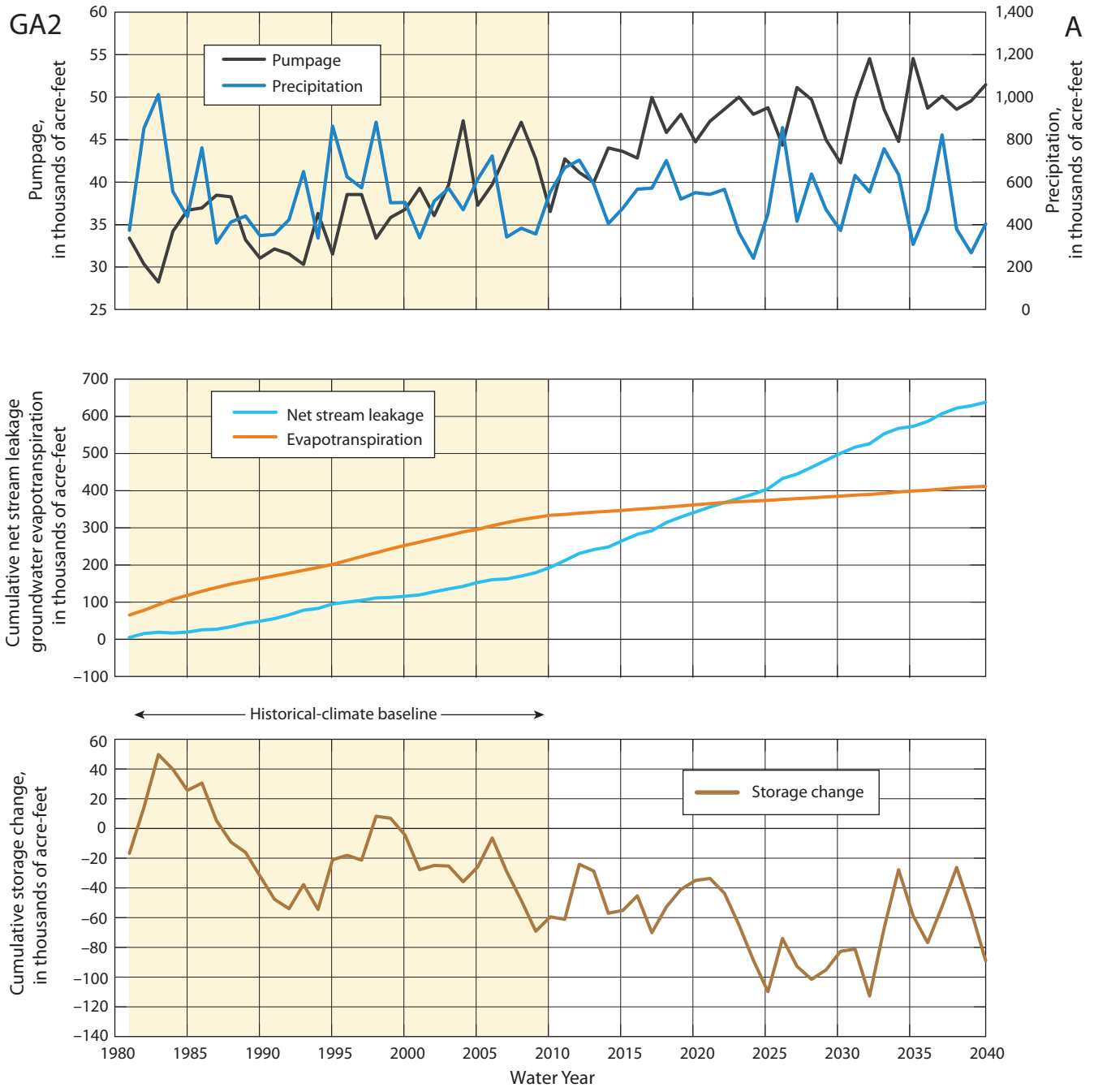
EXPLANATION

Model storage unit

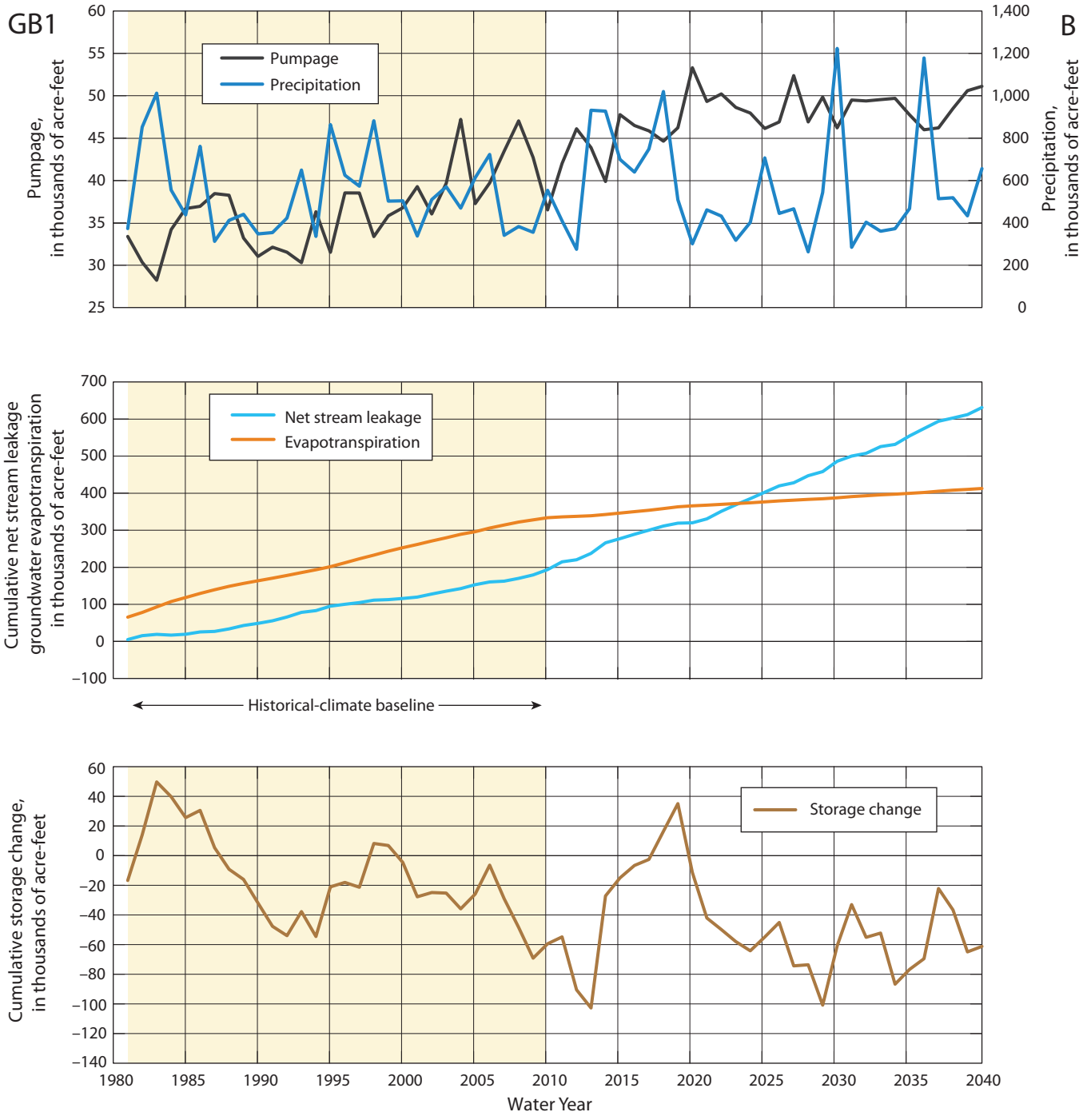
- Windsor
- Santa Rosa
- Cotati-north (Cotati-N)
- Cotati-south(Cotati-S)
- Rincon-Kenwood
- Bennett Valley-plain
- Wilson Grove
- Basement Complexplain
- Mayacmas Mountains
- Bennett Valley-mountains
- Sonoma Mountains
- Wilson Grove-mountains
- Basement Complex- mountains
- Mountain-stream cell in model-separate storage unit in layer 1
- Santa Rosa Plain watershed and hydrologic-model boundary

Model Groundwater Subareas (Storage Units)

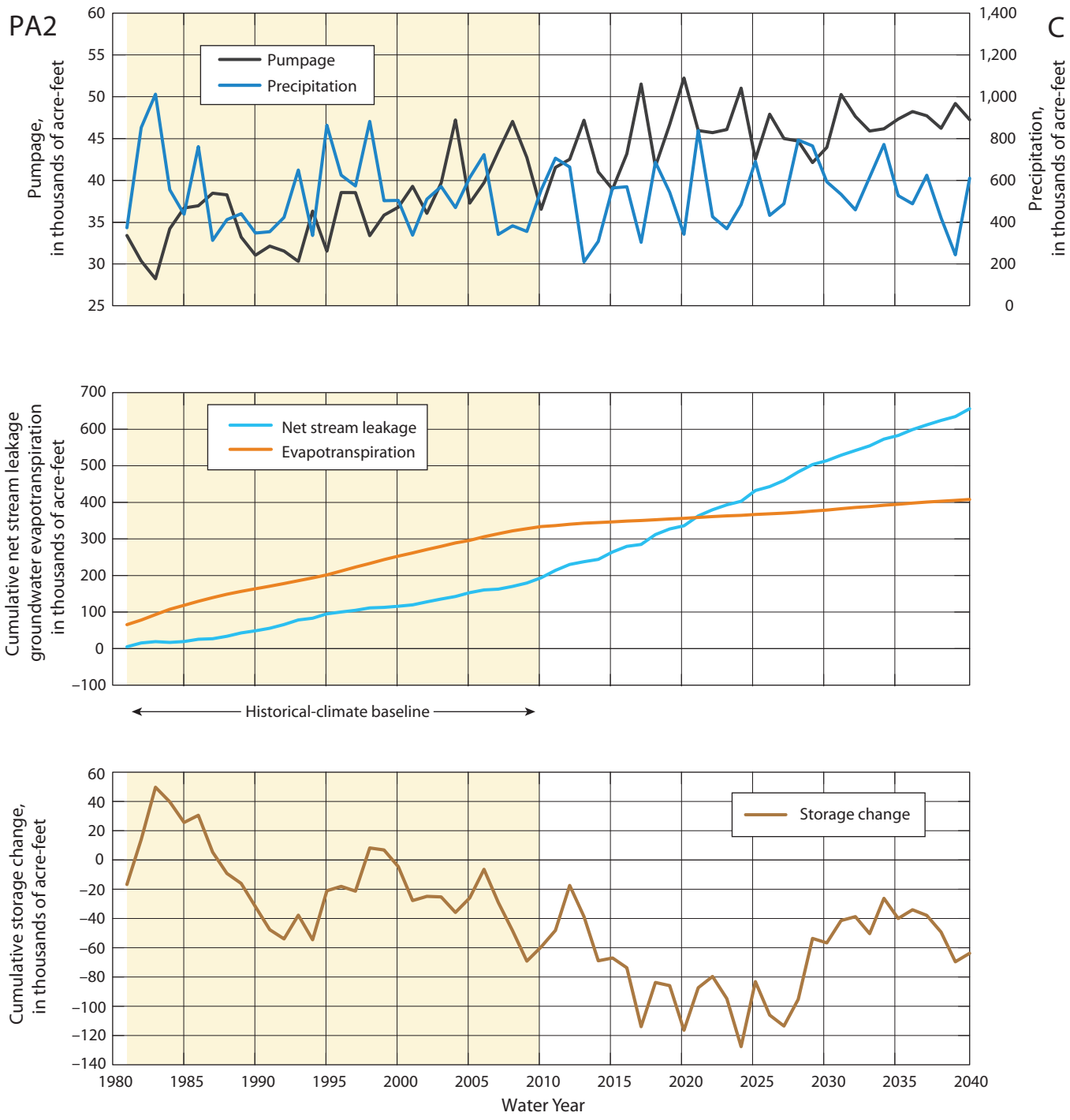
Figure 2-29



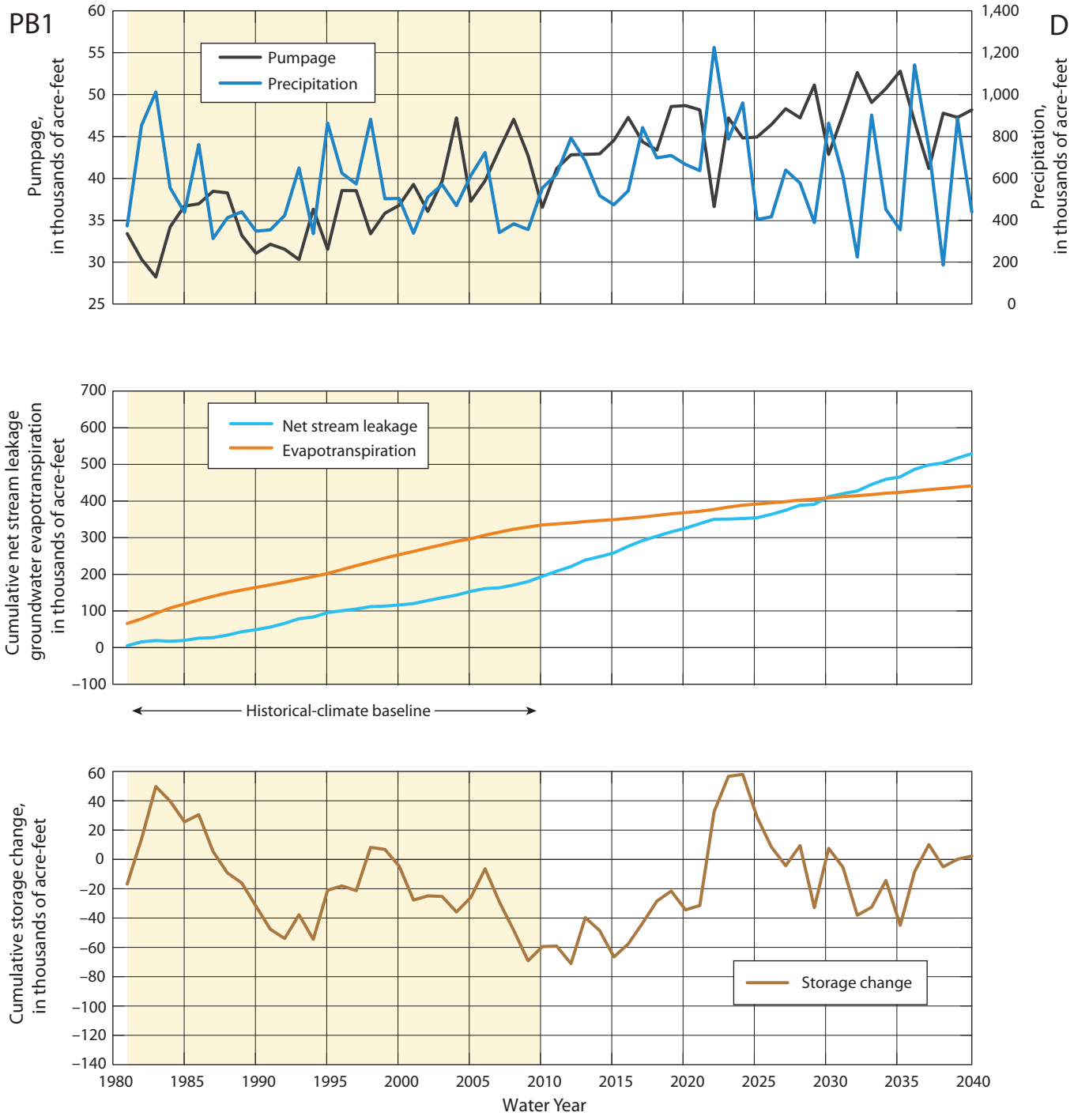
Change in Pumpage, Stream Leakage, and Storage for GA2	Figure 2-30A



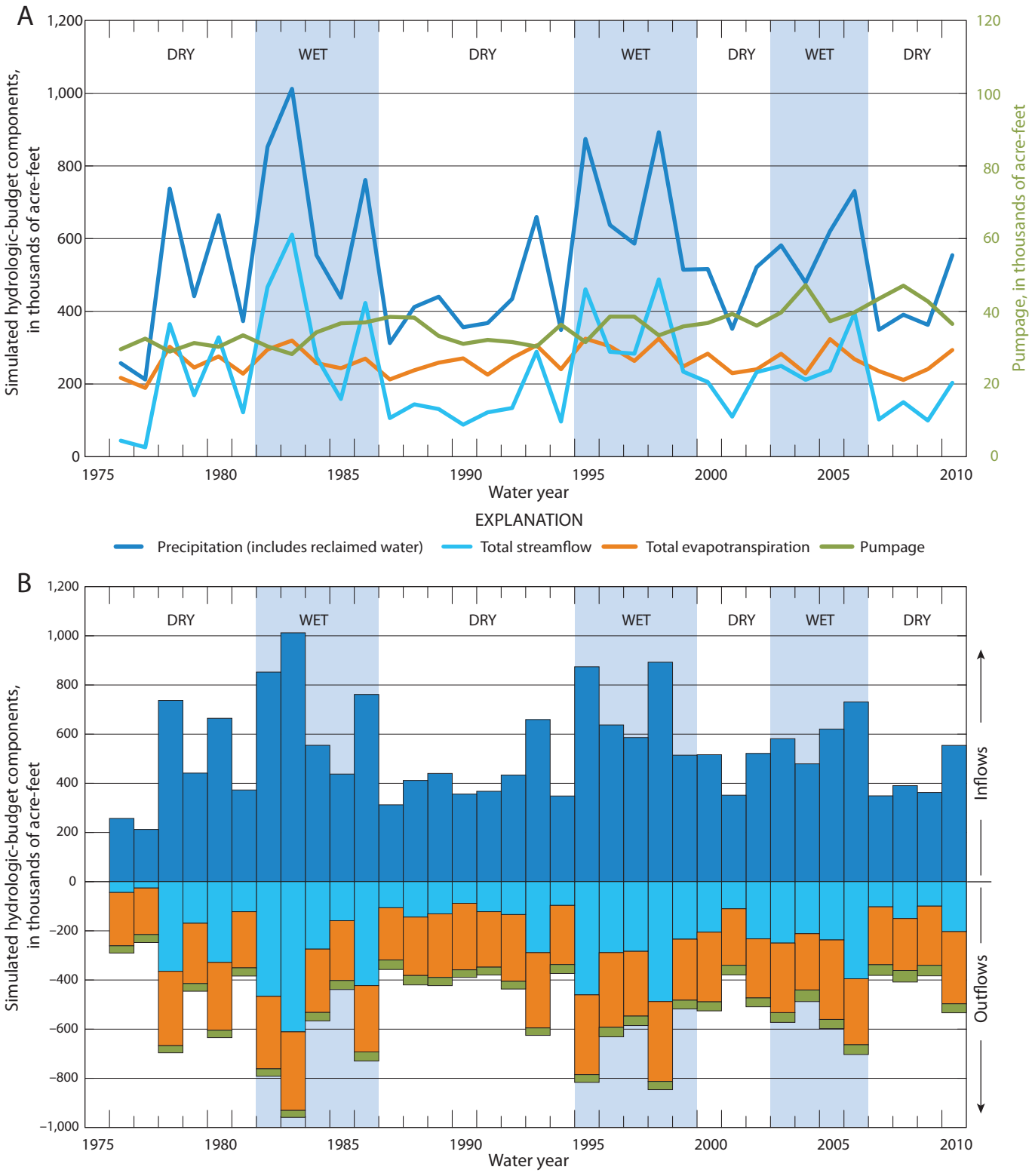
Change in Pumpage, Stream Leakage, and Storage for GB1	Figure 2-30B



Change in Pumpage, Stream Leakage, and Storage for PA2	Figure 2-30C



Change in Pumpage, Stream Leakage, and Storage in PB1	Figure 2-30D

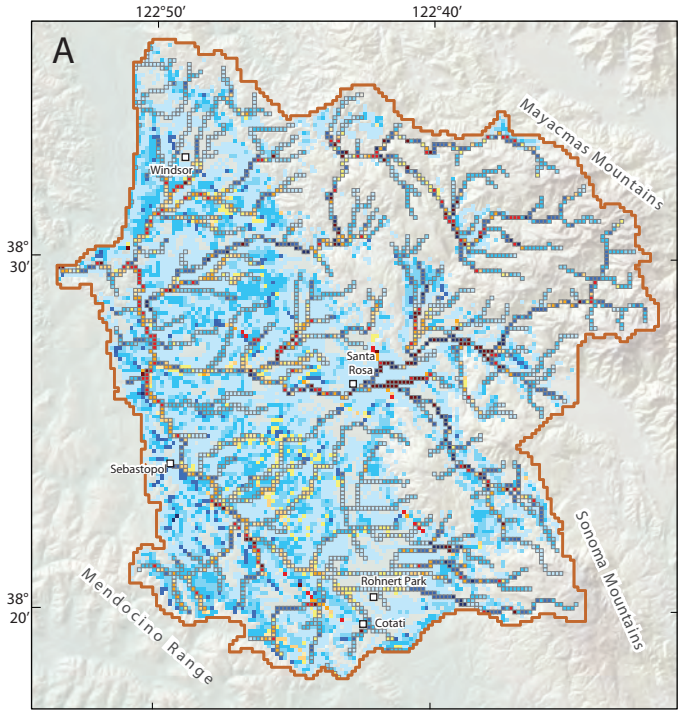


EXPLANATION

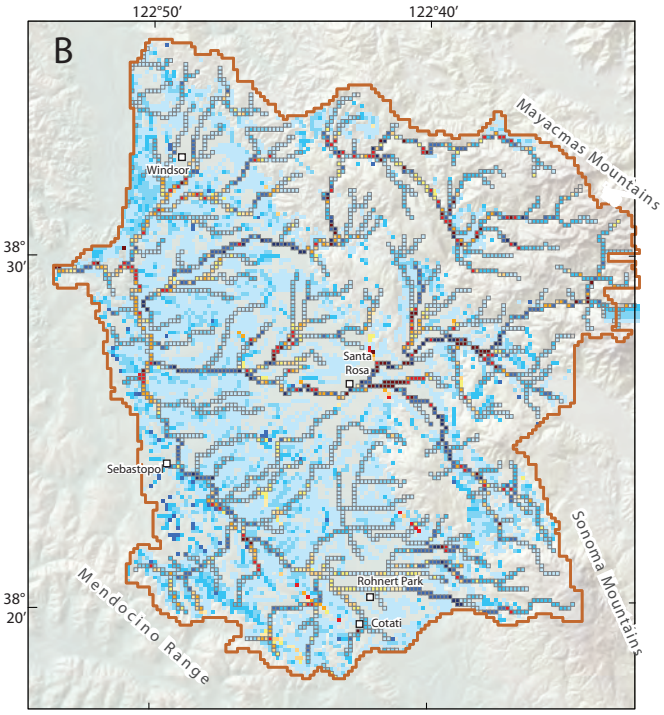
Precipitation (includes reclaimed water) | Total streamflow | Total evapotranspiration | Pumpage

Simulated Hydrologic Budget Components 1976-2010

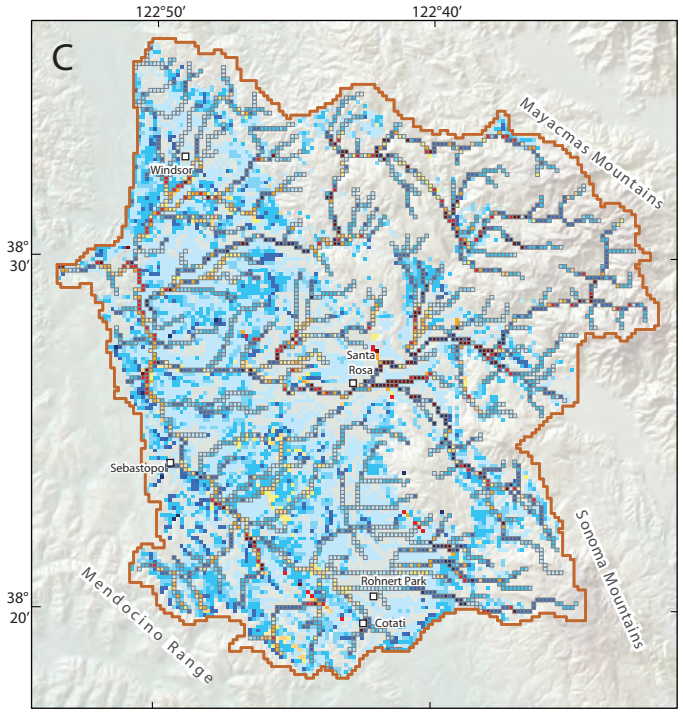
Figure 2-31



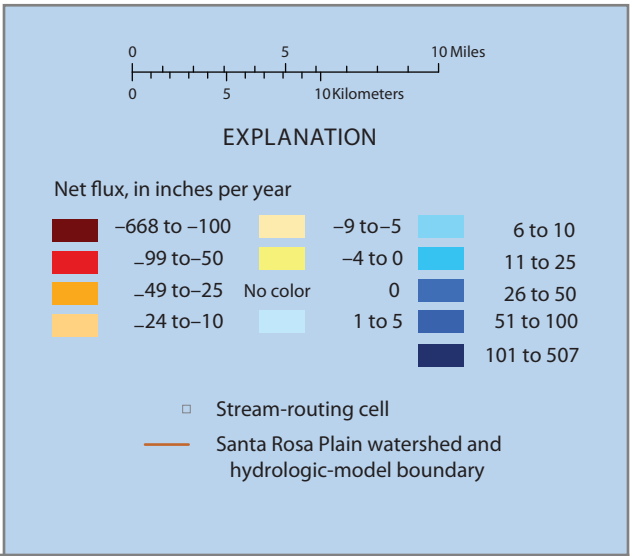
1976–2010
Average net flux (recharge) = 33,202 acre-feet per year



Dry Year 2009
Average net flux (recharge)= 22,170 acre-feet

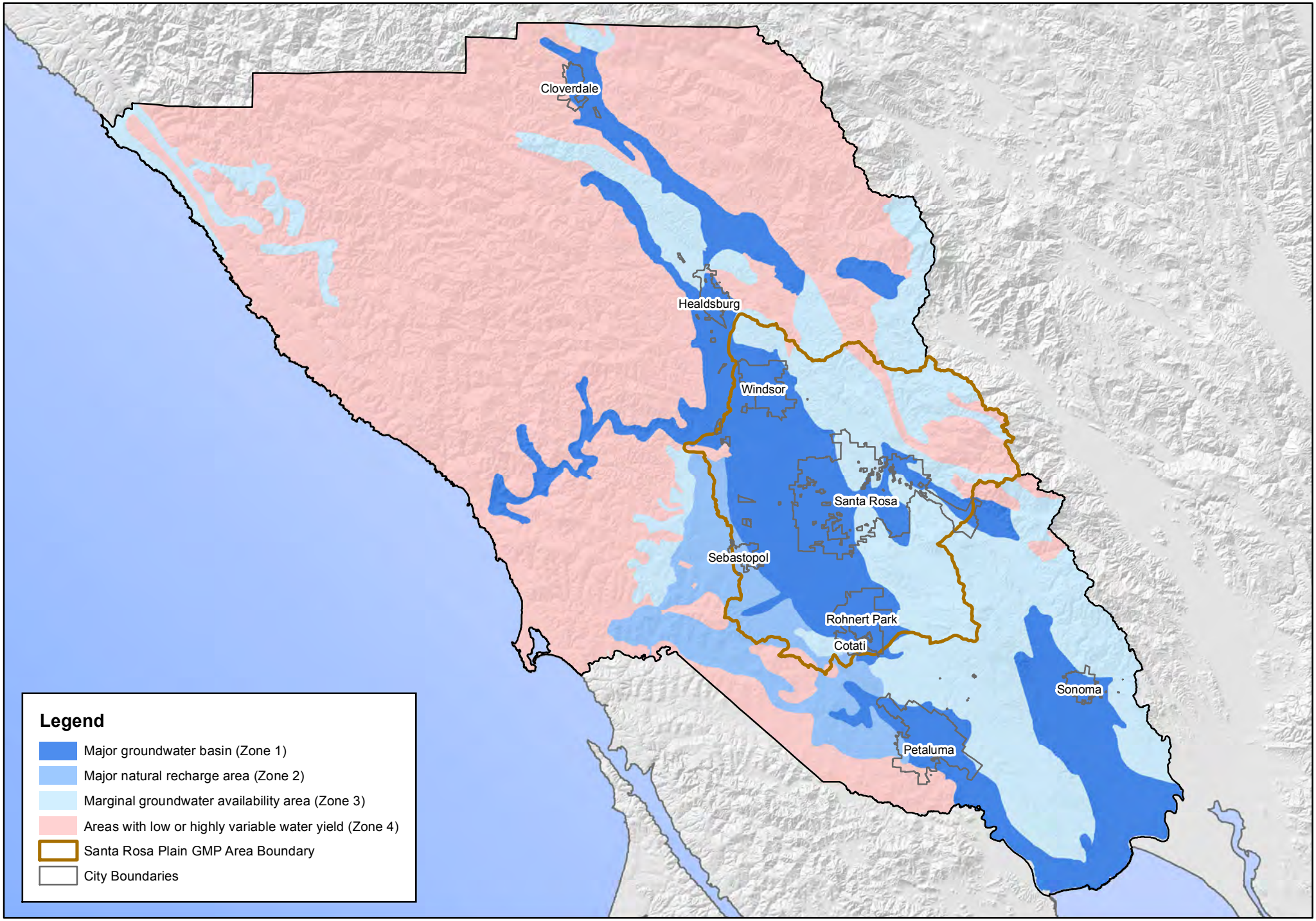


Wet Year 2006
Average net flux (recharge)= 48,283 acre-feet



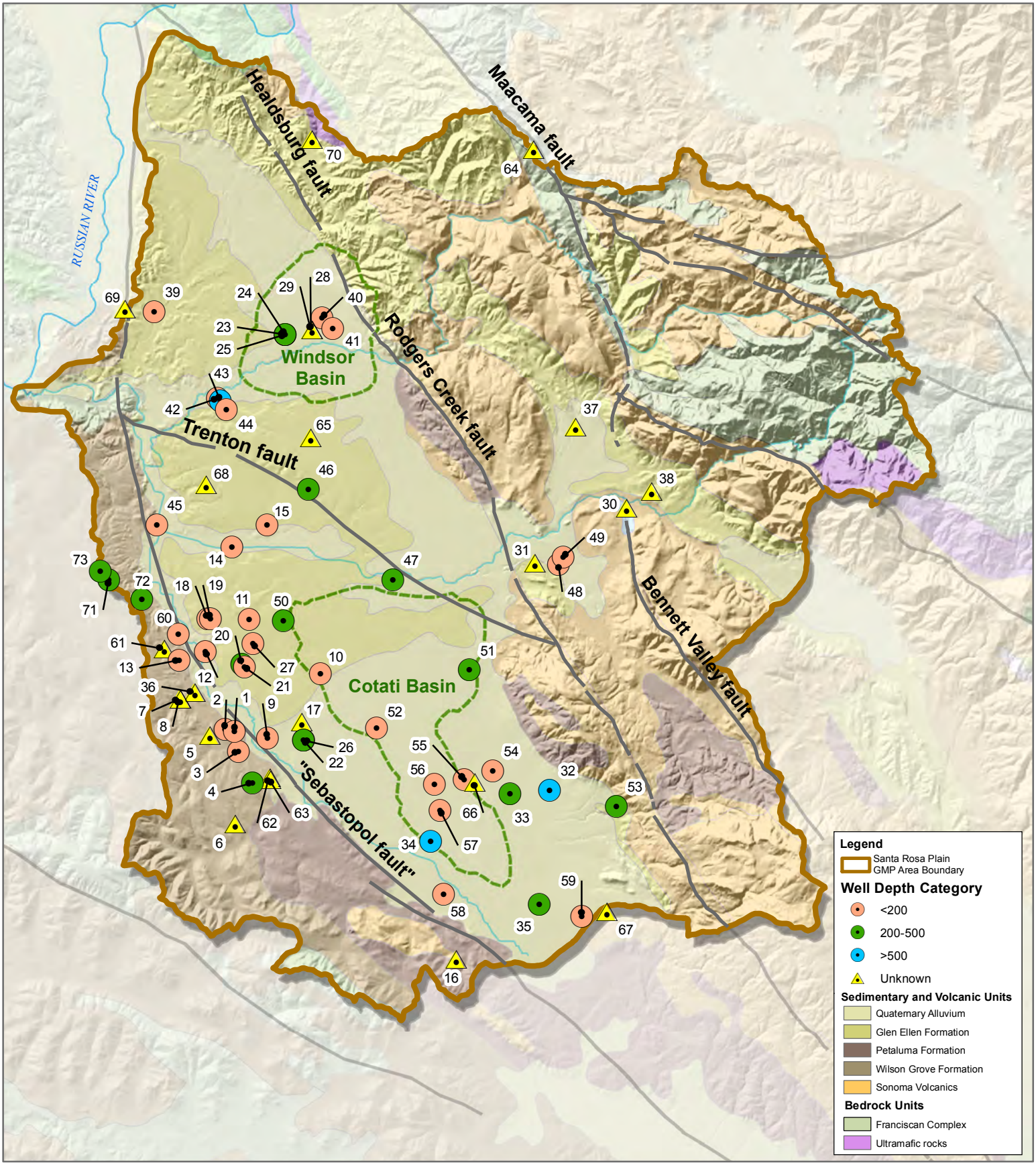
Average Net Recharge 1976-2010

Figure 2-32



Groundwater Availability - Sonoma County

Figure 2



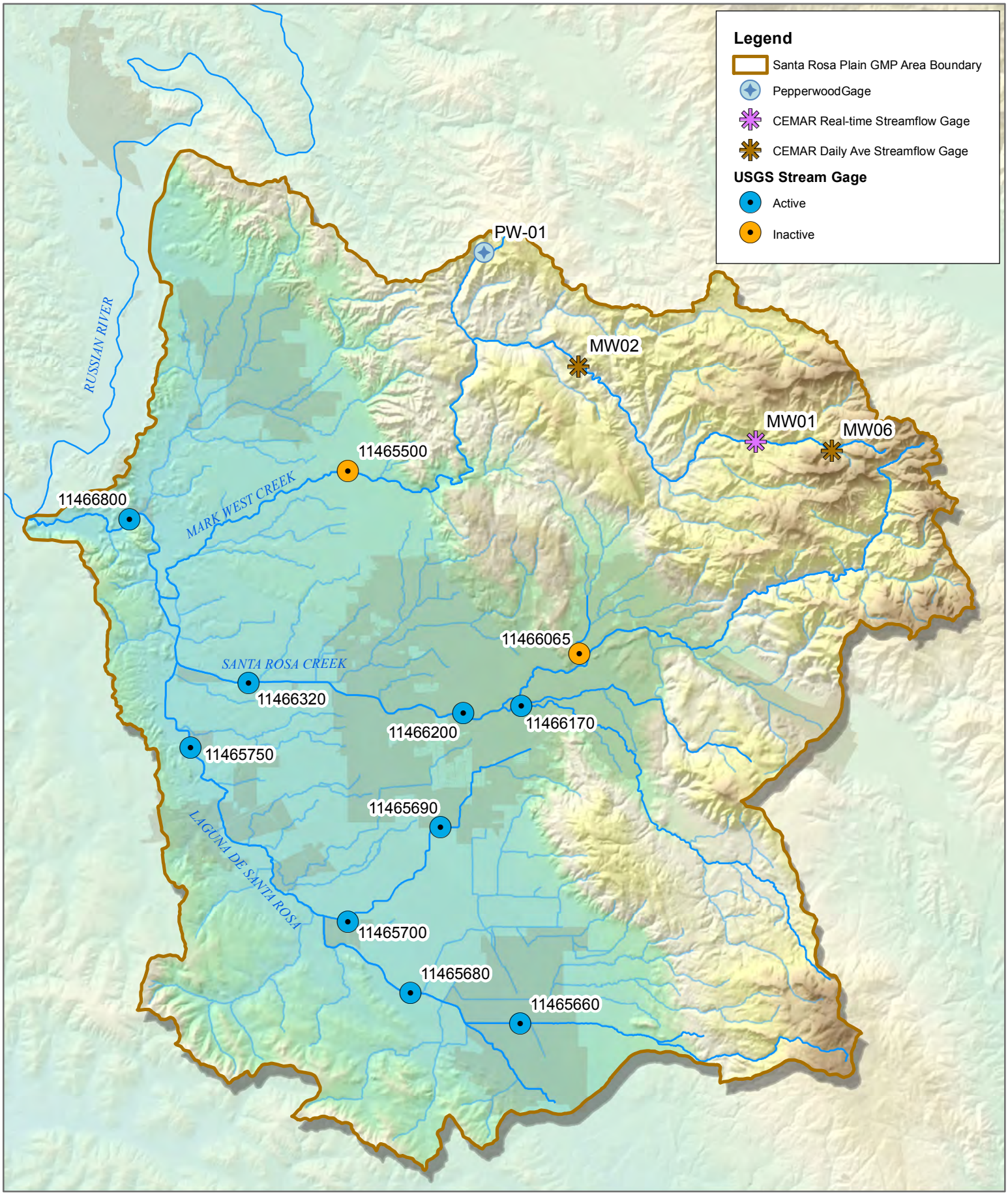
Groundwater Level Monitoring Well Locations

0 1 2 4 Miles

N W E S

Figure 5-1

Figure 5-2. Groundwater Quality Monitoring Wells, Santa Rosa Plan Watershed. (*Under Development*)

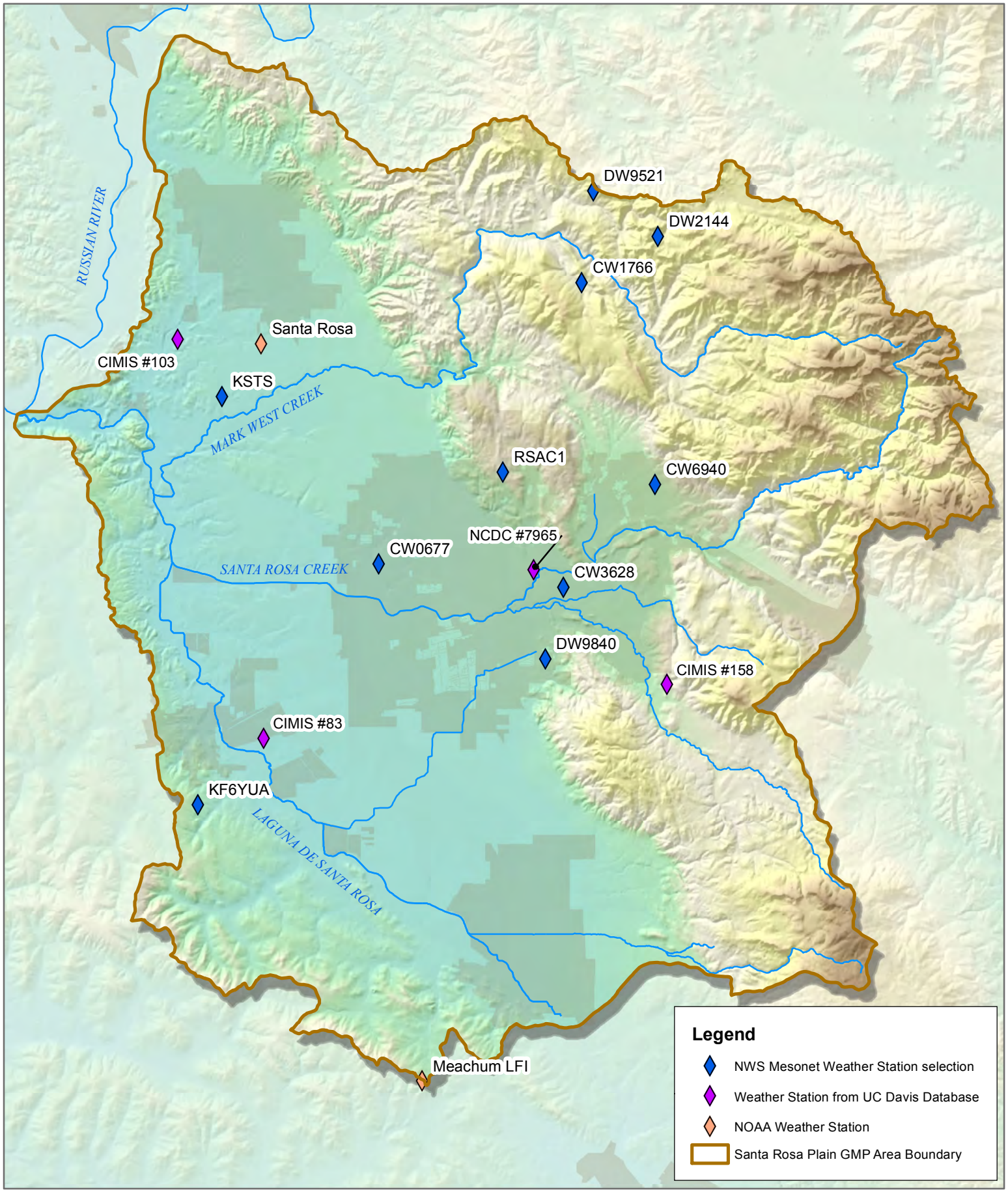


Streamflow Gage Locations

0 1.25 2.5 5 Miles

N W E S

Figure 5-2



Weather Station Locations

0 1 2 4 Miles

N W E S

Figure 5-3